PIT AND QUARRY

NOVEMBER 1951

In this Issue . . .

Operations of American Nepheline, Permanente Cement, Schundler, Napa Perlite, and Scott County Stone • Report on Natl. Lime Assn. Operating Meeting • Natl. Safety Congress And Show • Directors' Meetings of Natl. Sand And Gravel and National R.M.C. Associations

Loading a Truck in the Lime Rock Quarry of the Dixie Lime Products Company, Ocala, Fla.

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MACK TRUCKS

See You Through

• There are many good reasons why a Mack is your best truck investment during times like the present. Most important of all is the undisputed fact that Mack trucks outlast them all.

This means that with a Mack truck you can face the uncertainties of the future with assurance…confident that even if trucks should become hard to replace your Mack will see you through…that it will stay on the job delivering dependable service mile after mile and year after year.

Thousands of truck users in World War II found out by actual experience that they were indeed "Lucky to own a Mack." Whatever the future may bring, you'll find that for a sound investment in long-term reliability and operating economy there's no other truck to match a Mack.

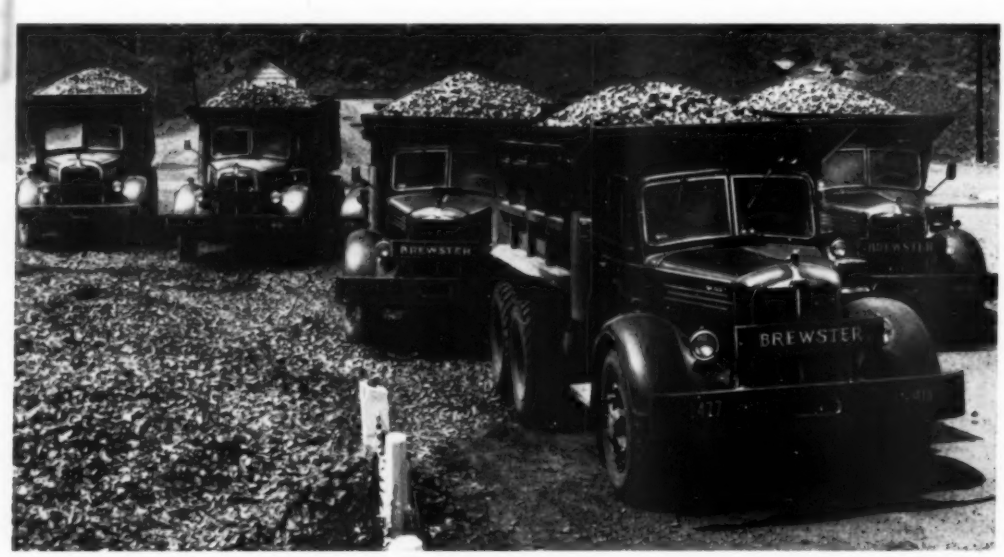
Your nearest Mack branch or distributor will give you the full story on what "Built Like A Mack" means in *extra* long life, *extra* strength and stamina, *extra* performance and *extra* dependability.

Mack TRUCKS

…outlast them all

Mack Trucks, Empire State Building, New York 1, N.Y. Factories at Allentown, Pa.; Plainfield, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

These Model LJSW Diesel Macks — owned by George M. Brewster & Son, Inc., one of the country's larger contractors — are hauling directly from the quarry fine aggregate which will be used to make blacktop for the New Jersey Turnpike.



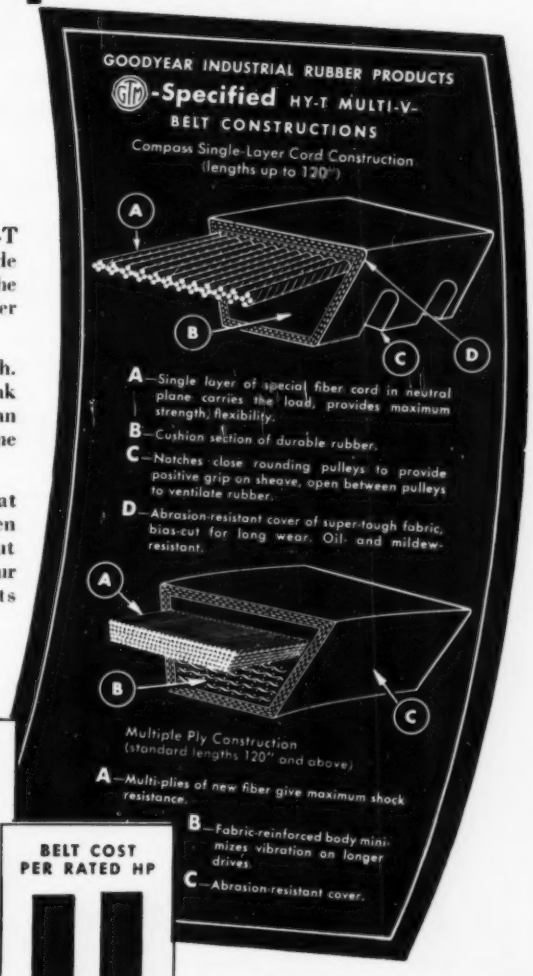
No other V-Belt matches Goodyear's Super-Rated HY-T

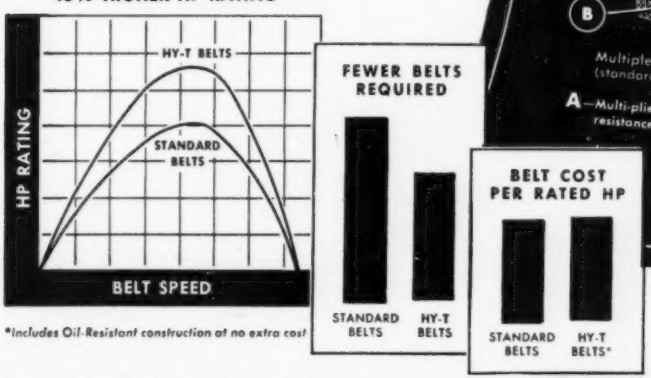
For Shock-Resistance
For Long Life
For Hard Work

NO other belt can match Goodyear's new HY-T Multi-V-Belt. Goodyear gives you a belt made with new chemically produced fiber that forms the load-carrying cords of these belts, provides greater strength and higher horsepower rating.

It has the strength of nylon—without its stretch. That means a super-rated V-Belt that will "soak up" the heaviest shock loads—last far longer than ordinary construction V-Belts even under extreme heavy-duty service.

Look at the charts here. See for yourself what HY-T Belts will do for you on your V-Drives. Then ask the G.T.M.—Goodyear Technical Man—about matched sets for your multi-drives. Or see your nearest Goodyear Industrial Rubber Products Distributor.


GOODYEAR INDUSTRIAL RUBBER PRODUCTS
GTM-Specified HY-T MULTI-V-BELT CONSTRUCTIONS
Compass Single-Layer Cord Construction (lengths up to 120")
A
B
C
D
A—Single layer of special fiber cord in neutral plane carries the load, provides maximum strength, flexibility.
B—Cushion section of durable rubber.
C—Notches close rounding pulleys to provide positive grip on sheave, open between pulleys to ventilate rubber.
D—Abrasion-resistant cover of super-tough fabric, bias-cut for long wear. Oil- and mildew-resistant.
Multiple Ply Construction (standard lengths 120" and above)
A—Multi-plies of new fiber give maximum shock resistance.
B—Fabric-reinforced body minimizes vibration on longer drives.
C—Abrasion-resistant cover.



*Includes Oil-Resistant construction at no extra cost

FOR HOSE, FLAT BELTS, V-BELTS, MOLDED GOODS, PACKING, TANK LINING, RUBBER-COVERED ROLLS built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.

HY-T, Compass—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

THE GREATEST NAME IN RUBBER

PIT AND QUARRY, November, 1951, Vol. 44, No. 5. Published monthly by the Complete Service Publishing Company, 431 South Dearborn Street, Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1933, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

Cut Cooling Costs

these 3 Ways

1. CUTS ROTARY KILN FUEL COSTS

Air-Quenching grate cooler actually returns 75% of sensible heat in clinker back to kiln as secondary combustion air. Clinker is cooled quickly, to a temperature where handling is no problem, by means of cooling air coming up through the relatively thin bed of hot material on grate.

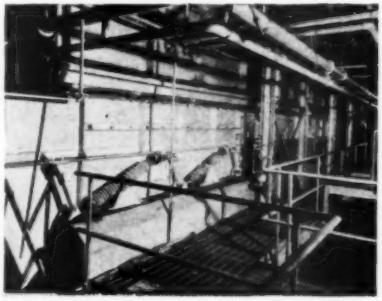
2. CUTS CLINKER GRINDING COSTS

Air-quenched clinker is easier to grind — capacities of clinker grinding mills handling hard-to-grind clinker have been increased as much as 10% with the installation of an air-quenching grate cooler. Rapid cooling also helps nullify the detrimental effects of magnesia in clinker.

3. CUTS MAINTENANCE COSTS

Reciprocating motion of grate is carried on flexible rubber bushings and springs. No wearing parts and no slippage. Clinker does not slide on grate, it hops, gently and steadily. Lubrication is negligible, only four grease fittings on entire cooler. Maintenance cost runs as low as 1/10 cent per barrel.

COOLS 100 BARRELS AN HOUR FROM 2500° TO 90° F.
In the modern plant of Dewey Portland Cement Co., Davenport, Iowa, this 4½ x 70 ft Allis-Chalmers air-quenching grate cooler cools 100 barrels of cement clinker per hour from 2500° F. to approximately 90° F. It's one of three Allis-Chalmers grate coolers installed here.



Save on Installation Cost, Too!

The air-quenching grate cooler comes as a complete unit, fits into existing plants readily because it operates horizontally. Installation costs are 10 to 30 percent less than the cost of installing any other type of cooler! Get more facts from the Allis-Chalmers representative in your area, or write for Rotary Kiln Bulletin 07B6368A. Allis-Chalmers, Milwaukee 1, Wisconsin.

Pulverator is an Allis-Chalmers trademark.

ALLIS-CHALMERS A-C

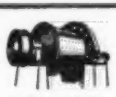
A-3391

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Pulverators

Vibrating Screens

Jaw Crushers

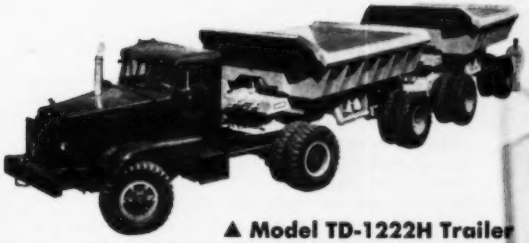

Grinding Mills

Gyratory Crushers

Kilns, Coolers, Dryers

Bigger and Better

SIDE-DUMPS



▲ **Model TD-1222H Trailer**
Double-bottom automatic drop-door, hydraulic side-dump hauling 45 tons at a cement plant.

▲ **Model TP-1518D Trailer**
Duplex doorless pan-type side-dump hauling 18 tons for a large crushed stone producer.

◀ **Model TL-1530 Trailer**
Lift door side-dump hauling 30 tons at a great new iron ore development.

B-1049

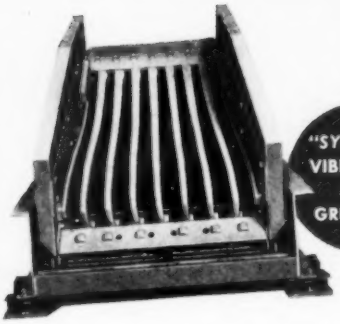
Choose From More Than 30 Standard EASTON Side-Dump Truck Bodies and Trailers for Earth, Rock and Ore.

EASTON
Side-Dumps
Easton Car & Construction Co. • Easton, Pa.

USE

"SYMONS" SCREENS

ALL THE WAY...



"SYMONS" VIBRATING BAR GRIZZLIES

from PRIMARY SCALPING on through the FINER SEPARATIONS

For sizing operations, Nordberg offers a broad line of "SYMONS" Vibrating Screens from Heavy Duty Grizzlies for scalping through a wide range of types and sizes to meet practically every problem. Here are the "highlights" of the units illustrated:

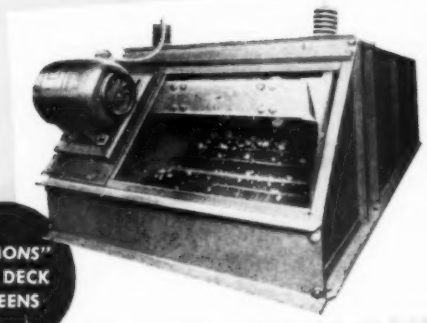
"SYMONS" Vibrating Bar Grizzly . . . for scalping coarse materials, designed to assure non-clogging action with big capacity.

"SYMONS" Rod Deck Screen . . . employs a highly efficient screen deck, utilizing individual replaceable spring steel rods. Features low screening cost—big capacity—low maintenance—long life—ideal for moist and sticky materials.

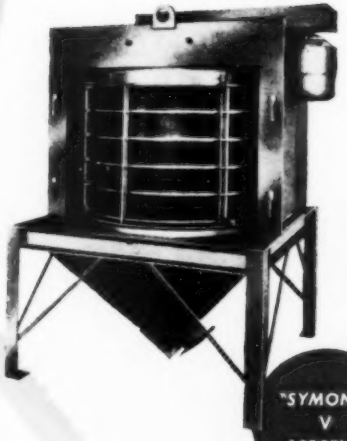
"SYMONS" Horizontal Screen . . . unsurpassed for accurate sizing of stone, gravel, slag, coal and ores. (Fully enclosed units available for efficient "hot plant" asphalt operations). Built in a variety of deck combinations, permitting a wide range of sizes to be handled.

"SYMONS" "V" Screen—the newest addition to the proven and popular line of "SYMONS" Screens—for extremely fine—single cut wet or dry separations. An entirely new principle of screening—employing controlled diffused feed—and vertical flow of material—with low speed rotary and high speed gyratory action.

Write for descriptive literature covering the type of unit in which you are interested.



"SYMONS" ROD DECK SCREENS



"SYMONS" V SCREENS

"SYMONS" HORIZONTAL SCREENS

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

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"SYMONS" . . . a Nordberg trademark known throughout the world

8251

NORDBERG

Machinery for processing ores and industrial minerals

"SYMONS" PRIMARY CRUSHERS

"SYMONS" CONE CRUSHERS

ROTARY KILNS

GRINDING MILLS

MINE HOISTS

DIESEL ENGINES

Sheffield Steel repeats AGAIN!

A Sixth NORTHWEST for Sheffield Steel Corp.

Houston, Texas

BACK in '48 we told you about the Sheffield Steel Corporation's experiences with Northwest. Performance was so satisfactory and operating cost of Northwest Shovels and Draglines was so low on their operations that they were replacing other machines in their Linden Pits with Northwests. They have recently taken delivery on their sixth Northwest.

Northwest advantages—the Northwest Dual Independent Crowd, Uniform Pressure Swing Clutches, the Cushion Clutch, the "Feather-Touch" Clutch Control, Northwest Simplicity of Design, Ease of Maintenance and other Northwest features combine to make it a *real* Rock Shovel—a mining shovel that means more output at lower cost.

You can plan ahead to have a Northwest. Let us give you full details. Join the Northwest Crowd.

NORTHWEST ENGINEERING COMPANY
1515 Field Bldg, 135 South LaSalle St., Chicago 3, Illinois

One of Sheffield Steel Corporation's Northwests working in the Jacksonville, Texas, pits.

NORTHWEST

Convertible for any Mining Material Handling or Excavation Problem

HORSEPOWER WORKS BETTER WHEN IT'S CLEAN!

That's why Delvac Oils give Top Performance in Your Engines

ENGINE EFFICIENCY calls for engine *cleanliness*... and Delvac Oils help keep heavy-duty gasoline and Diesel engines *clean*—promote full power—minimize wear—even under the toughest operating conditions!

Delvac Oils are heavy-duty oils with exceptional detergent-dispersive properties, and unusually high resistance to oxidation. They minimize formation of harmful deposits... effectively guard rings, pistons, cylinders and bearings against wear and corrosion . . . assure more available power.

This means fewer repairs and overhauls—*lower operating and maintenance costs all around!*

For top performance and economy from all your engines, use Delvac Oils—recommended or approved by 111 engine and equipment builders.

Here's Practical Help for Contractors . . .

Socony-Vacuum gives you quality lubricants *plus* . . .

- Help on maintenance problems.
- Individual, tested lubrication schedules.
- Advice on correct application of lubricants, and on proper handling and storing.
- One source of supply, available everywhere.
- Simplified inventory—with . . .

1. **DELVAC OILS**—for all gasoline and automotive-Diesel engines.
2. **MOBILUBE GX**—multi-purpose gear lubricant for all manually operated transmissions, transfer cases and drive axles.
3. **MOBILGREASE**—in grades and types for lubrication of all chassis parts, engine accessories.

SOCONY-VACUUM

DELVAC OILS

Correct Lubrication for Contractors

**THE FLYING RED HORSE COMPANIES: SOCONY-VACUUM OIL COMPANY, INC.
MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION**

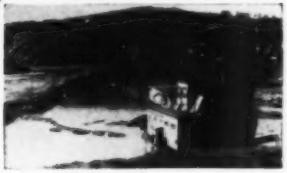
Remove TOUGH CLAY, SOFT ROCK AND OTHER REFUSE FROM any material!

TYPICAL INSTALLATIONS OF McLANAHAN LOG WASHERS

Three pairs of McLanahan Logs in the world's largest phosphate plant in Florida.

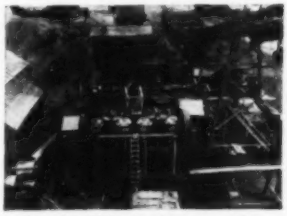
New and old type McLanahan Log Washers used here remove clay from cement rock in Pennsylvania.

McLanahan Welded Steel Log Washers are smooth running, highly efficient machines for removing tough clays, soft rock and other materials from iron and manganese ores, barytes, zinc, ochre, peat, limestone, trap rock, sand and gravel, phosphate, gold and other ores. These machines remove up to 90% of refuse materials—providing savings that more than pay for the installation in a short time. A few of hundreds of applications are illustrated at right.

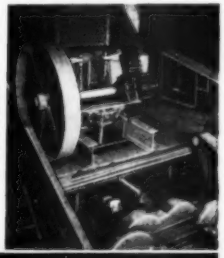


McLanahan Log Washers removing tough clays from gold ores in Alaska.

McLanahan Paddle Mill and Log Washer cleaning Texas limestone.



Two pairs of 30' McLanahan Logs, used for cleaning sand and gravel in Virginia.



McLanahan Rockmaster Crusher and Log Washer removing tough clays from iron ore in Alabama.

Write today for Bulletin WLO 849

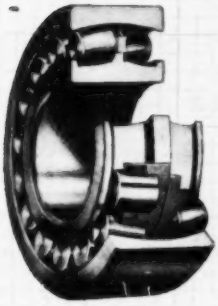
McLANAHAN & STONE CORPORATION
Pit, Mine and Quarry Equipment Headquarters
Hollidaysburg, Pennsylvania

Dependable Products: **Single and Double Roll—and Jaw Crushers, Crushing Plants, Reciprocating Plate and Apron Feeders, Roll Grizzlies, Conveyors, Elevators, Screens, Scrubbers, Steel Log Washers, Sand Drags, Hoists, Jigs, Dry Pans, Dryers, Scrap Bundlers, Pulleys, Gears, Bearings, Sprockets, Sheaves, Rollers, Bin Gates, Elevator Buckets, Gratings, Car Wheels, Ferrous and Bronze Castings.**

"Caterpillar" Diesel Tractors develop

more workpower from horsepower

. . . through Torrington Bearings



In the constant mesh transmissions of "Caterpillar" D6, D7 and D8 Tractors, Torrington Spherical Roller Bearings are used to provide larger load capacity and smoother flow of power from the engine to the tracks.

On the upper transmission shafts of the D6, D7 and D8, and on the pinion shaft of the D8, these self-aligning bearings automatically compensate for possible shaft deflections—binding stresses cannot develop.

Torrington Spherical Roller Bearings are helping all kinds of heavy-duty equipment do a better job, with a minimum of "time-out" for maintenance. Why not let our engineers show you how these high-capacity bearings can improve the efficiency of your machinery?

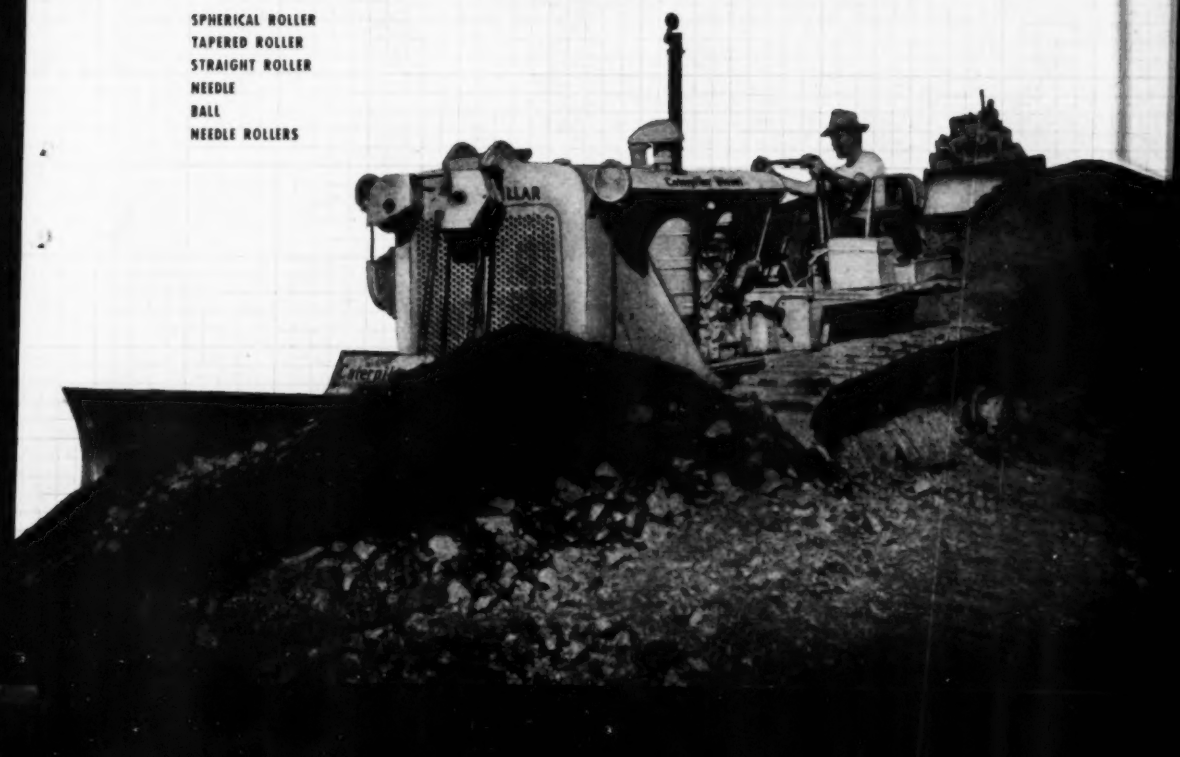
THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON SPHERICAL ROLLER BEARINGS

SPHERICAL ROLLER
TAPERED ROLLER
STRAIGHT ROLLER
NEEDLE
BALL
NEEDLE ROLLERS



"QUICK-WAY"

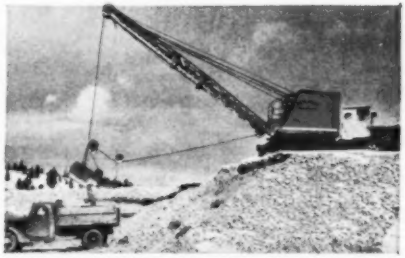
Reg. U.S. Pat. Off.

Speeds Output Increases Profits for PIT AND QUARRY OPERATORS

Whether its moving shot rock, sand, or crushed stone, stripping overburden or charging bins, you'll find the "QUICK-WAY" in a class by itself in the ¼ to ½ yard field.

The "QUICK-WAY" features low center of gravity, works easily over the side, has proper balance for truck operation, gives you easy, fast swinging, plenty of reserve power, rugged all steel construction, numerous parts interchangeable. 4 models, ¼ to ½ cubic yard shovel, clamshell, dragline, backhoe, 3 to 10 ton crane capacity. Truck speeds to and from jobs. Low initial cost. Low maintenance costs. Eight different attachments.

With a "QUICK-WAY" you'll roll up yardage records hour after hour, day after day. Ask your distributor for a free demonstration or mail coupon.



"QUICK-WAY" Model E dragline with 30' boom loading gravel

"QUICK-WAY" truck shovel, loading sand

"QUICK-WAY" crane with skull cracker attachment eliminates secondary shooting

Clinker is handled from the pit to the storage pile and from the storage pile to grinding circuit with a mobile "QUICK-WAY" crane

"QUICK-WAY"
TRUCK SHOVEL CO.
Denver, Colorado, U.S.A.

MAIL COUPON TODAY

"QUICK-WAY" TRUCK SHOVEL CO.
Dept. 29 • 2401 East 40th Ave. • Denver 1, Colorado

Please send me complete details on "QUICK-WAY" Truck Shovels —four different models from 3 to 10 ton crane capacity.

Name _____

Address _____

City _____ State _____

SOME MIGHTY BIG CONSTRUCTORS
ARE TRIPLING THE LIFE OF WEAR
SURFACES* AT ONLY HALF
THE COST OF OTHER METHODS BY
USING WEAR-ARC ELECTRODES

*and they are conserving critical alloys.

ANY equipment parts that are subject to rough impact or severe abrasion are likely applications for *Wear-Arc* hard facing. Write for Bulletin 5651 for application information and welding procedures.

Alloy Rods Co.

ALLOY RODS COMPANY
No Finer Electrodes Made . . . Anywhere
YORK, PENNSYLVANIA

AR-5

WIRE ROPE

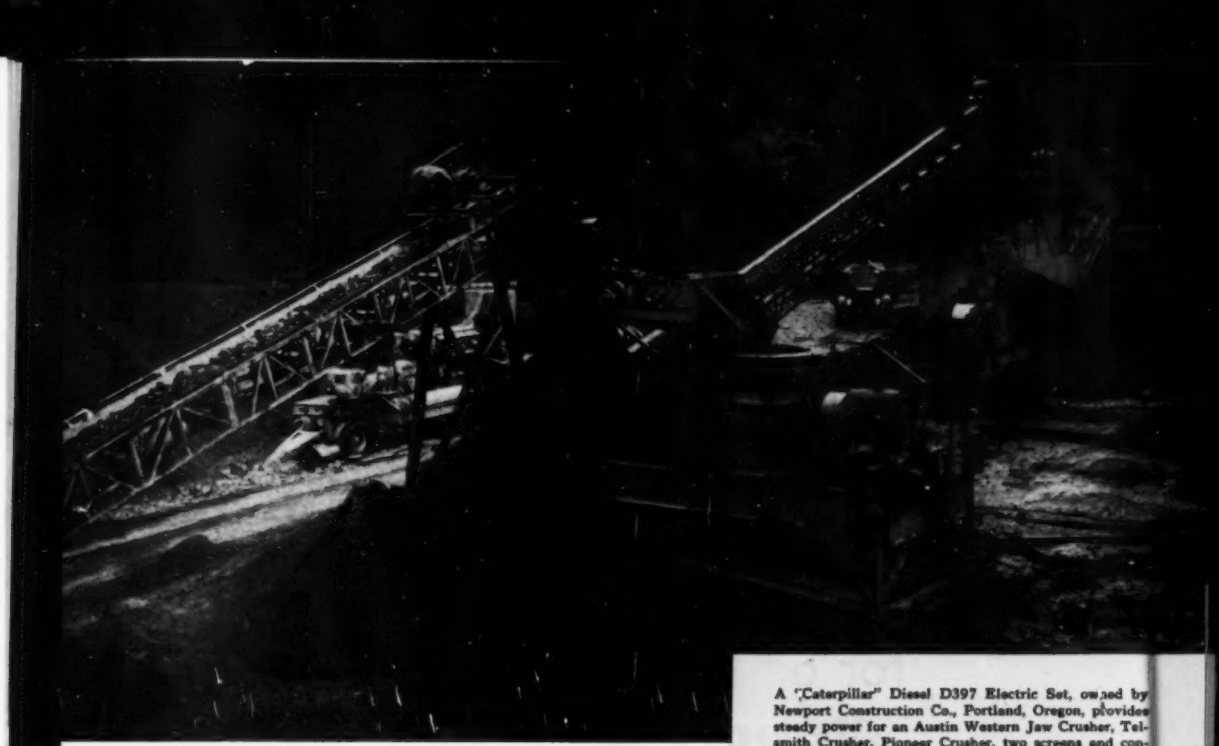
You PAY for the best . . . make sure you GET it . . . always specify Roebling

YOU PAY FOR THE BEST when you buy wire rope. And you *get the best* when you buy Roebling Preformed "Blue Center" Steel Wire Rope. "Blue Center" steel is an exclusive Roebling product . . . gives rope the extra toughness that spells long life . . . service economy that really counts. Besides that, Roebling Preformed can be cut without seizing . . . always spools better . . . reduces vibration and whipping . . . doesn't tend to set or kink.

Roebling makes a wide range of wire rope . . . brings you the right construction, grade and size for top performance and economy on each installation. Have your Roebling Field Man help select the *best* rope for your particular requirements. And for maximum savings, get his suggestions on the proper use and maintenance of wire rope. He knows the case histories of thousands of installations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

Atlanta, 934 Avon Ave ★ ***Boston,*** 51 Sleeper St ★ ***Chicago,*** 3525 W. Roosevelt Rd ★ ***Cincinnati,*** 3253 Fredonia Ave ★ ***Cleveland,*** 701 St. Clair Ave, N.E. ★ ***Denver,*** 4801 Jackson St ★ ***Detroit,*** 915 Fisher Building ★ ***Houston,*** 6216 Navigation Blvd ★ ***Los Angeles,*** 216 S. Alameda St ★ ***New York,*** 19 Rector St ★ ***Odessa, Texas,*** 1920 E. 2nd St ★ ***Philadelphia,*** 230 Vine St ★ ***San Francisco,*** 1740 17th St ★ ***Seattle,*** 900 1st Ave. S. ★ ***Tulsa,*** 321 N. Cheyenne St ★ Export Sales Office, ***Trenton, N. J.***



A "Caterpillar" Diesel D397 Electric Set, owned by Newport Construction Co., Portland, Oregon, provides steady power for an Austin Western Jaw Crusher, Telsmith Crusher, Pioneer Crusher, two screens and conveyors at a rock crushing plant near Estacada. Production averages 90 yards per hour. Other "Caterpillar" equipment in the Newport line-up: Two D8 Tractors, one D4 Tractor and two No. 12 Motor Graders.

There's a big job ahead

How your equipment takes the beating of the months ahead is important to the whole defense effort of the free world. More than 58 billion tons of limestone and cement rock, cushed stone, sand and gravel are needed this year as a vital factor in defense. And we're entering a period when machinery must stand up or else.

Military needs and Defense Rated Orders are taking their share of "Caterpillar" production. Shortages of steel and other materials add to the difficulty of supplying the entire demand for new engines and machines. This means that *present equipment must be kept in use.*

"Cat" Diesel Engines are built to handle the rugged duty that goes with quarry operations. And "Cat" Diesel Tractors, Motor Graders and Earthmoving Equipment have the stamina to serve you long and faithfully under the toughest conditions. *How* long is up to you. Good care pays off in longer wear.

You can add many hours to equipment life if you follow sound maintenance practices. Anticipate your parts needs *before* wear goes beyond repair. Talk it over with your "Caterpillar" dealer. He is qualified to give competent opinion. If a part is not readily available, he has the tools and knowledge to rebuild many worn parts — and keep your machinery on the job.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

You're the Doctor

Don't let your engine overheat. Maintain the cooling system, keeping it free of scale, rust and sediment. Use soft or treated water and, when freezing temperatures exist, protect your engine with anti-freeze. Clean the radiator periodically, removing foreign matter from the core by brushing or washing. Use chemical flushing solutions. Prevent engine troubles which come with overheating. Consult your Operator's Instruction Book.

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS
MOTOR GRADERS
EARTHMOVING EQUIPMENT

looking for a

tough mine power cable?

it's **ANACONDA BUTYL-INSULATED**

High Voltage Cable

No metal armor or lead sheath, yet . . .
There's even greater mechanical and electrical protection in the combination of *neoprene jacket* and *butyl insulation.*
Together they provide:
Unequalled protection from impact, crushing, twisting and abrasion.
Higher dielectric strength.
Greater resistance to moisture, acids, oils, ozone, heat and flame.
Less weight, more flexibility; easier to handle, install, splice and maintain. Lower first and final costs!

Anaconda Butyl-Insulated High Voltage Cable is the modern cable for any mine—particularly mechanized mines. Anaconda also specializes in the manufacture of shuttle car cable and cable for the new continuous mining machines. Let our mine service specialists show you, or get in touch with your near-by Anaconda Distributor. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.

the right cable for the job

ANACONDA®

WIRE AND CABLE

EFFICIENCY IN LOADING

Your loading job can be efficient. The Eimco 104 will dig, carry and load at a much faster rate than other types of equipment.

Consider the savings in time and maintenance in this straight line loading. Consider the heavy duty construction of this machine — built to load rock — but equally efficient in easy loading materials.

The Eimco 104 loads at the rate of 4 to 6 yards per minute in rock or 6 to 8 yards per minute in lighter material.

Write today for more information on this efficient loading unit.

EIMCO

THE EIMCO CORPORATION

The World's Largest Manufacturers of Underground Rock Loading Machines

EXECUTIVE OFFICES AND FACTORIES: – SALT LAKE CITY 10, UTAH, U. S. A.

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AGENTS IN ALL PRINCIPAL CITIES THROUGHOUT THE WORLD

Exhaustive ENGINE TESTS Prove

ALL 5 CLRC TESTS, standardized by the Co-ordinating Lubricants Research Committee, prove Shell Rotella Oil superior to the average of leading diesel lubricants . . . from every critical standpoint: parts-wear, corrosion resistance, ring-sticking and piston fouling.

Moreover, further tests, such as the Modified Lauson Lacquer Rating Test and Shell's own extremely severe Four Ball Test . . . all add proof upon proof that Shell Rotella Oil *does* keep engines clean longer . . . *does* extend time between overhauls . . . *does* reduce parts wear.

FLEET SERVICE confirms engine test results!

Read these authorized reports:

Yellow Cab Company, Nashville, Tenn., has 75 cabs, running 24 hours daily. They write: "We have always had trouble with sludge forming in the crankcase of our motors due to the constant start and stop driving . . . On some cabs this sludge completely blocked the passage of oil through the pump screen . . . bearings were burned out.

"After months of operation on Shell Rotella Oil we are glad to report that the *motors (thus far) examined have been found entirely clean, the pump screen as bright as brand new, and we have had no bearing trouble of any nature.*"

Creston Transfer Company, Grand Rapids, Michigan, haul uncrated furniture to the East Coast and southern cities. Creston began using Shell Rotella Oil nearly 4 years ago to correct a serious overhaul problem due to short valve life in their trailer truck engines. Shell Rotella Oil has increased valve life from 8,000 miles to better than 40,000 miles and greatly reduced all-around maintenance costs. Creston Transfer is now expanding with hauls to nearly every state. The proved lower maintenance through using Shell Rotella Oil is a basic part of Creston's expansion planning.

SHELL ROTELLA OIL . . . EXTENDS

You can EXTEND TIME between overhauls...

SHELL ROTELLA OIL slashes maintenance costs–Maintains engine efficiency

1. Positive ANTI-ACID ACTION

Shell Rotella Oil drastically reduces wear in the vital top-cylinder zone by counteracting the acid action of unburned fuel particles. This protection is extremely important in engines with intermittent loading.

2. Constant DISPERSANT ACTION

The excellent dispersant properties of Shell Rotella Oil permit it to dissolve contaminants and hold them in suspension until draining time. This prevents premature fouling.

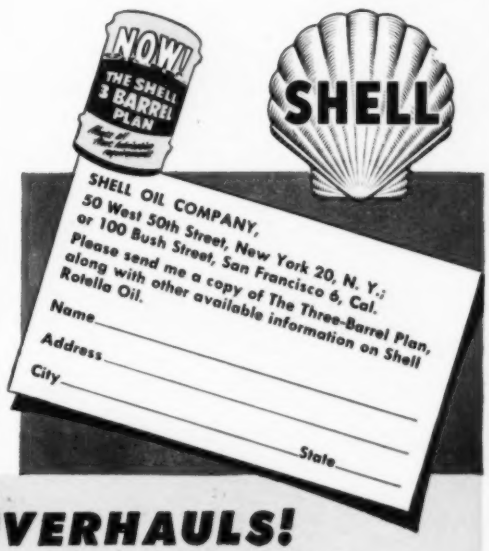
3. Maintained Engine Efficiency

Is the direct result of reduced top-cylinder and ring-face wear. Moreover, new or reconditioned engines operating with Shell Rotella Oil show a welcome extension of the "low oil consumption" period because of this same reduced wear. The above gains, combined with freedom from fouling and a significant increase in valve life, enable you to extend time between engine overhauls.

FLEET OPERATORS!

Shell Rotella Oil is "Barrel One" in Shell's famous Three-Barrel Plan for fleet lubrication

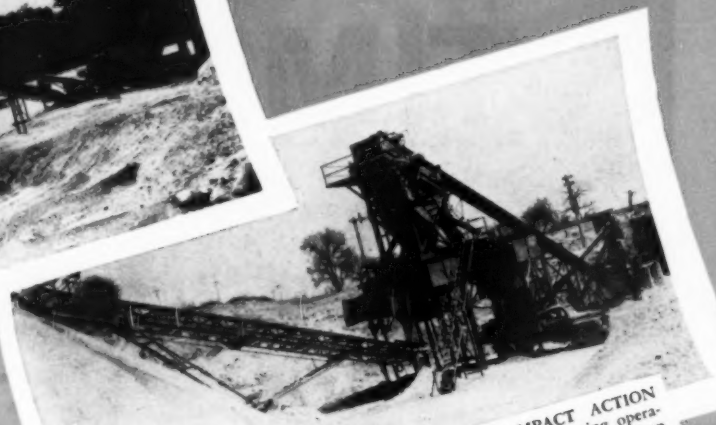
If you want to cut lubricant inventories to the bone . . . to realize savings in time, labor and materials . . . mail this coupon for "The Three-Barrel Plan." It's a practical booklet that shows how this revolutionary lubrication program can cut your maintenance costs.


N.O.W!
THE SHELL 3 BARREL PLAN
SHELL
SHELL OIL COMPANY,
50 West 50th Street, New York 20, N. Y.;
or 100 Bush Street, San Francisco 6, Cal.
Please send me a copy of The Three-Barrel Plan, along with other available information on Shell Rotella Oil.
Name
Address
City
State

TIME BETWEEN OVERHAULS!

PRODUCTION

CONTROLLED IMPACT ACTION IN WISCONSIN. Portable 3240 Impact Master with 36" x 12' apron feeder, 30" delivery conveyor, Murphy ME6 Diesel. Feeds output to 5' x 14' 3-deck vibrating screen, oversize returns to breaker. Average production 150 tph 2½" minus high quality cubical aggregate.



CONTROLLED IMPACT ACTION IN IOWA. In a free running operation this stationary closed circuit setup averages 28% of 1½" minus plus ¾", 38% of ¾" minus plus #4, and 34% aglime. Percentage of sizes can be changed easily to meet market demands. As high as 180 tph of 1½" minus have been recorded. 135 h.p. electric power.

CONTROLLED IMPACT ACTION IN ILLINOIS. With motors turning at 900 rpm with GM 6031-C, this 3240 Impact Master is turning out profitable quantities of ¾" minus, and aglime. More than 50% aglime production has been noted.

CONTROLLED IMPACT ACTION IN TEXAS. A high production setup with a minimum plant investment. This portable 3240 Impact Master is equipped with 32' portable apron feeder and GM 6-110 power unit. Capacity of 200 tph of 2" minus.

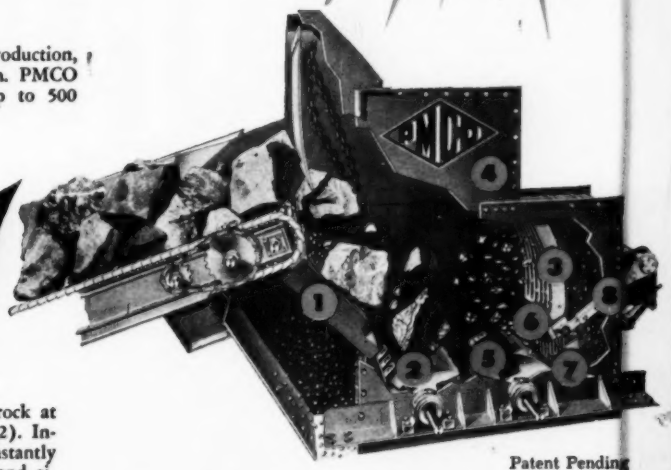
PLUS WITH CONTROLLED IMPACT ACTION

Exclusive operating principle of PMCO Impact Master delivers extra profit-making advantages

- Top capacity
- High ratio of reduction eliminates secondary crushers and auxiliary equipment. Provides a complete high output plant with minimum investment.
- 100% of the breaking is accomplished by rigidly mounted rotor hammers producing a better quality cubical aggregate.
- Better control over finished product size with simple mechanical adjustments changing the percentage of sizes.
- Less h.p. per ton of finished material.

Controlled Impact Action adds up to faster production, better production, more profitable production. PMCO Impact Masters are made with capacities up to 500 tph. Write for complete details.

HERE'S HOW IT WORKS



Patent Pending

Adjustable feed plate (1) guides in-coming rock at proper angle into first rotor hammer circle (2). In-fed rock is intercepted in motion, exploded instantly by the terrific impact of the rotor hammers and simultaneously projected toward vertical screen grate (3) where finished sizes are immediately discharged.

Oversize particles are deflected upwards, intercepted by feed chute back plate (4) and guided downward into the path of the second rotor hammer circle (5) where they are exploded and projected toward the bottom half of the vertical screen grate and the lower screen grate (7) for immediate discharge.

Both rotor hammers rotate in the same direction toward the rear, promoting fast feeding and keeping all material flowing toward the discharge for top capacity.

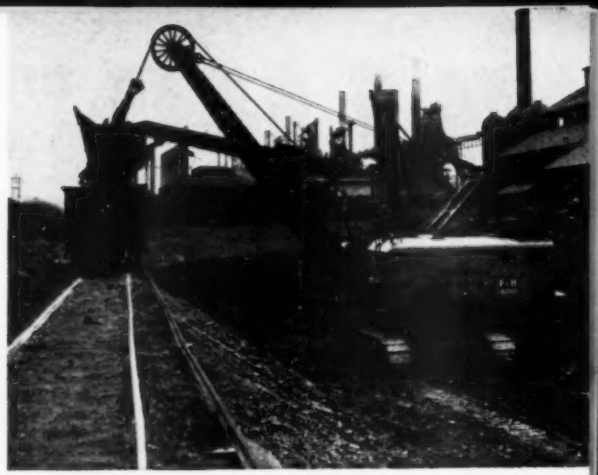
Finished product sizes are controlled by the speed of the rotor hammers, and by simple adjustments (8) of stripper bar (6) and lower screen grate.

By controlling the in-fed rock and directing its flow, practically 100% of the breaking is accomplished by the rotor hammers. There is no attrition, no abrasive or grinding action. This reduces wear and makes possible a more uniform gradation cubical aggregate.

PETTIBONE MULLIKEN CORPORATION

4700 West Division Street, Chicago 51, Illinois Phone SPaulding 2-9300

HAMMERMILL HAISS UNIVERSAL



down come costs

These two P&H Electrics serve the same steel-making operation at Birmingham, Alabama. The Model 1600, owned by the Birmingham Slag Company, is loading blast furnace slag. The Model 1400, digging fluxing stone, is owned by the Stockbridge Stone Company.

with P&H ELECTRIC SHOVELS

Wherever these new P&H Electrics take over, costs go *down!* It couldn't be otherwise, with all the improvements that make for faster, smoother, more dependable digging.

There's Magnetorque* Hoist Drive, which gives you snappier dipper action with electro-magnetic power — completely eliminates hoist generator, hoist motor, slip friction clutch, and other mechanical devices.

There's P&H stepless power regulation — smoother, more accurate — and no control fingers or contactors to require maintenance or give you trouble.

There's tough, all-welded construction for extra strength without excess weight.

There's more — *much more* — see a P&H before you invest in new equipment of this type.

* Trade-mark of Harnischfeger Corporation for electro-magnetic type clutch.

P&H ELECTRIC SHOVELS
4451 West National Avenue
Milwaukee 14, Wisconsin

P&H HARNISCHFEGER CORPORATION

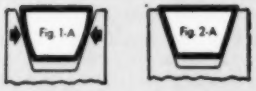
Every third P&H Electric Shovel sold is a repeat order

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FAB HOMES

Here is *Exactly WHY* a V-Belt with CONCAVE SIDES Gives You *Longer Wear!*

What Happens When a V-Belt Bends

Straight-Sided V-Belt — Fig. 1 — Fig. 2 — Gates Vulco Rope with Concave Sides



How Straight-Sided V-Belt Bulges in Sheave-Groove. Sides Press Unevenly Against V-Pulley Causing Extra Wear At Point Shown by Arrows.

The Concave Sides Fill Out to a Precise Fit in the Sheave Groove. No Side Bulge! Sides Press Evenly Against the V-Pulley — Uniform Wear — Longer Life!

To see for yourself how a V-Belt that has *concave sides* is certain to give longer wear, just make this simple test:—

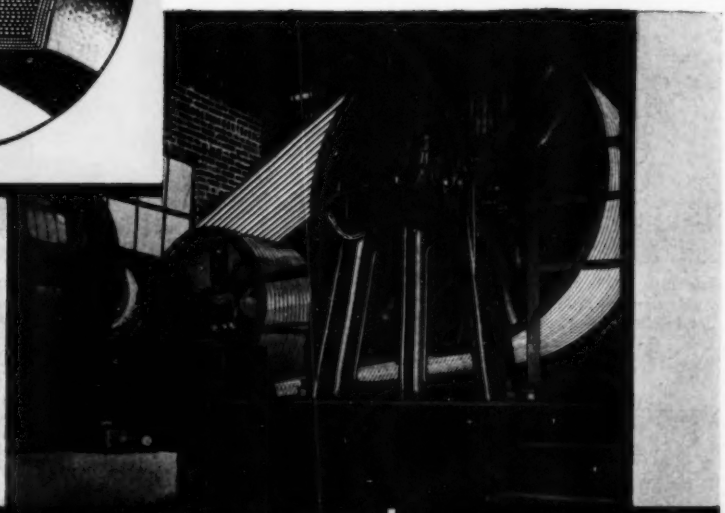
Pick up any V-Belt you have at hand. Bend that belt as it bends around a pulley. As it bends, grip its sides between your fingers. Here is what will happen *everytime*.

If the V-Belt you are testing has *straight sides*, you can feel those sides *bulge out* as the belt bends. This out-bulge forces the sides of the belt to press *unevenly* against the V-Pulley and you naturally get *concentrated* wear just where the bulge is greatest—as shown in figure 1-A, at left.

Now, make this same test with the belt that is built with *Concave Sides*—the Gates Vulco Rope!

Whereas you felt an *out-bulge* when you bent a belt with straight sides, you find that the *Concave Sides* merely fill out and become *perfectly straight*. The sides therefore *press evenly* against the V-Pulley. This distributes the wear *uniformly* across the *full width* of the belt. Naturally, this means longer belt life and *lower* belt costs for you!

Only V-Belts made by Gates are built with concave sides. Whenever you buy V-Belts, be sure that you get the V-Belt with the Concave Sides—The Gates Vulco Rope!



. . Gates Vulco Rope Drive on the Mine fan of Sloss Sheffield Steel & Iron Company, Birmingham, Alabama. The drive operated 24 hours a day for 3 years without down-time.

CS-517

Gates

Hose V-Belts
Molded Rubber Goods
for industry

VULCO ROPE DRIVES

ENGINEERING OFFICES AND JOBBER STOCKS IN ALL INDUSTRIAL CENTERS

THE GATES RUBBER COMPANY
DENVER, U. S. A.
The World's Largest Makers of V-Belts

KEEP YOUR HANDS

Out of cement handling!

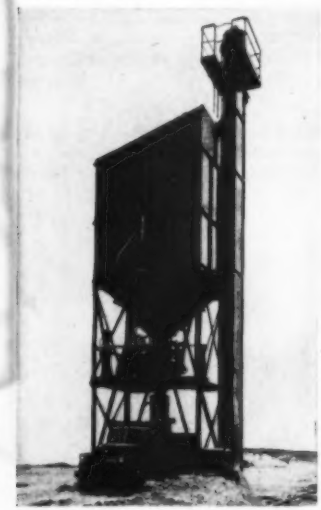
Handling bag cement is hard on the back and tough on the pocket-book. These 3 Erie Cement Plants take bulk cement mechanically from cement cars via undertrack screw and bucket elevator to the storage bin. Whatever your cement requirements there is Erie Cement equipment to meet your needs.

The Type "M" series at the left in 4 standard capacities will store from 172 to 600 bbls. in a portable-type plant.

The Type "L" series at the right in 3 capacities 575 to 1025 bbls. offers a knock-down or semi-portable plant for the large cement user.

The CSB-Series the "silo type" offers two diameters (11 and 12 ft.) and 5 standard capacities in each to provide storage for 274 to 1014 barrels of cement.

Give Erie engineers the description of your cement needs and their recommendations will speed your cement batching, save enough over bag handling to pay for the plant and eliminate cement waste.



Erie Type "M" portable single compartment cement plant in 4 capacities (172 to 194 Bbls.) (270 to 304 Bbls.) (437 to 492 Bbls.) (525 to 600 Bbls.). Write for Booklet M-3.

Erie Type "L" Single and Double Compartment Cement Bins standardized in 3 Capacities (575 to 645 Bbls.) (685 to 770 Bbls.) (910 to 1025 Bbls.). Write for Booklet L2

Erie CSB 592 Bbls. (11 ft. dia.) "Silo" Cement Bin shown. Available in 11 and 12 ft. diameters in 5 sizes each—also widely used for added recirculation ground storage in any capacity desired. Write for data.

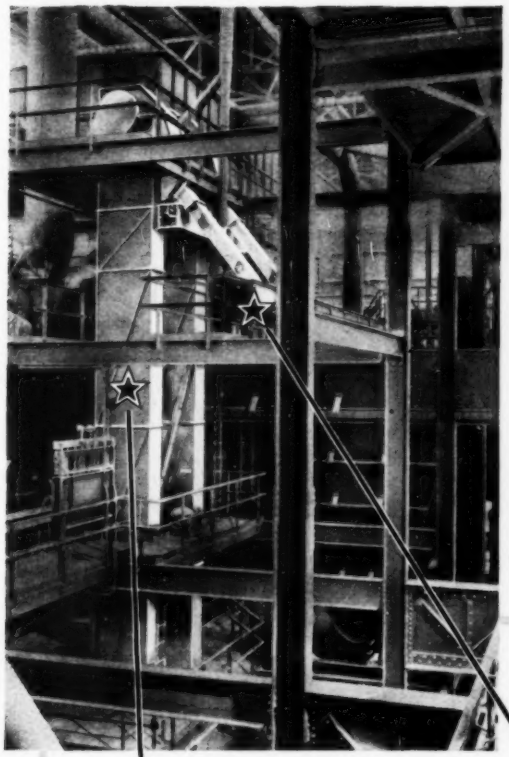
ERIE

STEEL CONSTRUCTION COMPANY

621 GEIST ROAD • ERIE, PENNSYLVANIA

MATCH YOUR JOB of Materials Handling...

with LINK-BELT Bucket Elevators and Screw Conveyors



LINK-BELT offers you the most diversified line of both . . . plus wide engineering experience

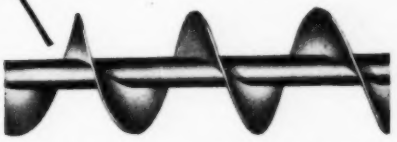
MOVE bulk materials with top efficiency. Choose your bucket elevators and screw conveyors from the complete Link-Belt line . . . engineered to meet your exact requirements.

For maximum results — different materials and varying conditions require specific types of materials handling equipment. That's why Link-Belt builds many types and sizes of enclosed conveying equipment . . . the *widest range* of bucket elevators and screw conveyors.

When you need bucket elevators or screw conveyors . . . choose them from the most diversified quality line on the market. Call in Link-Belt, the world's leading manufacturer of elevating and conveying machinery.

Steel-encased continuous Link-Belt Bucket Elevators deliver smooth flow of white-run and dark-run gypsum to Link-Belt Helicoid Screw Conveyors feeding surge bins in wallboard plant.

Continuous bucket elevator delivers high capacities at lower speeds.



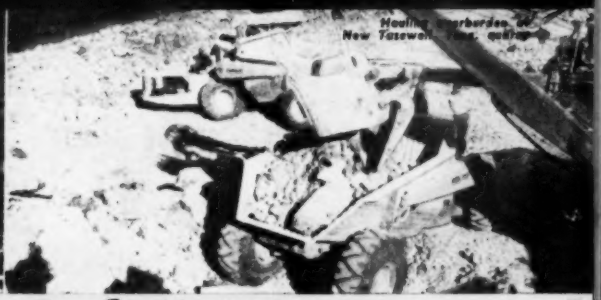
Helicoid or Sectional Conveyor Screws — for general screw conveyor applications, — may also be furnished in the metal and finish best suited to your purpose and with components selected from the most complete line.

LINK-BELT

BUCKET ELEVATORS AND SCREW CONVEYORS

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in Principal Cities. 12,349

Increase PRODUCTION . . .



Hauling overburden at New Tazewell, Tenn. quarry

1 ***Haul anywhere*** . . . Tournarocker is a new kind of haul unit built from the ground up for "off-road" hauling. It safely travels mountain trails and cross-country as well as highways and city streets. It hauls capacity loads over any kind of terrain. And, it stands up to tough, rough hauling work on steep grades with minimum maintenance. Optional Electroterder provides added braking action for safety on steep grades.

2 ***Speed loading*** . . . Big, wide "target" areas make it easy for shovel or dragline operators to get faster loading cycles with Tournarockers. Body opening on 9-ton size is 7' x 11', on 18-ton is 9½' x 12½', on 35-ton is 10'2" x 17'2". Width is most important because radial distance is hard for operator to judge. Rear of body provides a wide, low entry for the dipper to give extra speed advantage for the excavator.

Dumping sandstone near New Haven, Conn.

Road construction [illegible], Wash.

5 ***Reduce time dumping*** . . . a touch of electric switch on operator's panel activates hoist motor . . . means a fast, safe dump. Independent brakes on front and rear allow operator to safely back to edge of fill . . . lock rear wheels and dump over edge . . . yet keep prime mover in forward gear for safety and fast getaway. There is no delay for hydraulic pressure to build up, no slow jacking up by hydraulic pumps. Loads fall free and FAST!

6 ***Cleans load every time*** . . . even in mud and sticky clay, Tournarocker dumps clean. The streamlined body sheds material readily . . . body can be raised to vertical position to clear load . . . no material rides back to the excavator to steal pay-load room on next trip. Large boulders or oversize rock easily clear and can safely be dumped over edge of fill. Rocks cannot roll forward against wheels nor can material pile under rear end.

Stripping quarry rock near Phoenix, Ariz.

Stripping coal mine at Mt. Carmel, Pa.

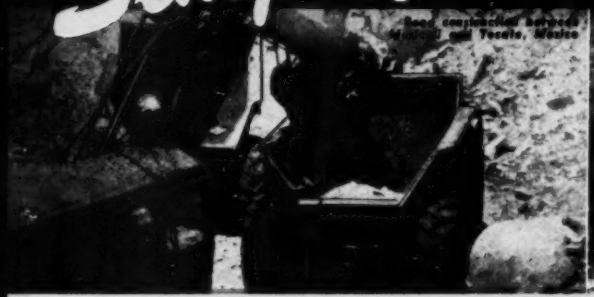
9 ***Cut maintenance troubles*** . . . because Tournarocker has no hydraulic lift complications, no high pressure jack lines to keep tight, no long drive-shafts to rear-wheel drive, the most common maintenance problems of rear-dump haul units are eliminated. Owners in all parts of the world are reporting exceptionally high mechanical efficiency and low maintenance costs handling heavy rock and ore with Tournarockers.

10 ***Improved safety*** . . . low center of gravity, good clearance, high visibility, front-wheel drive, 90° power steer, giant tires, big 4-wheel air brakes, push-button electric control, big comfortable air foam cushion seat, high maneuverability . . . all these features combine to make this rear-dump hauler an important asset for safety. This permits fast hauling, saves time on dump, and makes it easier to train new operators.

LE TOURNEAU PEORIA, ILLINOIS **TOURNAROCKERS**

TRACTION ADVANTAGES of A CRAWLER PLUS HIGH-SPEED on RUBBER

Simplify JOB MANAGEMENT



Road construction between [illegible] and Tecate, Mexico

Mountainside road relocation near Wenatchee, Wash.

3 ***Cut spotting delays*** . . . You need fewer "spots" with these BIG haul units, and, because of their big tops, it is easier and quicker to put them under the dipper. The prime mover can pivot at right angles to the body providing a 90° angle for prime mover wheels. That saves time at every spot. Operator can back in fast because he has positive power steer and can stop instantly with air-operated multi-disc air brakes.

4 ***Work fast in tight quarters*** . . . positive power steer, 90° turns, electric controls, multi-disc air brakes that have more braking surface on a single wheel than most haul units have on all four wheels . . . all contribute to fast handling over steep, narrow, winding pit roads. Giant tires roll easily over rough surfaces, steer easily out of ruts, give operator confidence under the most difficult hauling conditions.

Hauling rock overburden

Hauling clay for Portland[illegible] Ohio cement plant

7 ***Save dump cleaning*** . . . giant tires, big, four-wheel, multi-disc air brakes, powerful front-wheel drive, plus the rocker dumping action, make it easy for the Tournarocker operator to dump his entire load cleanly and safely over the bank even on a soft fill. This reduces time and expense of dump clean-up, provides continuous free dump area along entire fill, eliminates dumping delays and speeds up haul cycles.

8 ***Cut weather delays*** . . . Tournarockers keep hauling even when crawlers can't get through! Giant tires, 2' wide and over 7' diameter, give ample flotation for soft going. When a wheel slips, Tournamatic differential applies 4 times the pull to wheel on firmest footing. Independent power steer turns prime mover to seek new footing for better traction to pull out of mud holes. Job records prove these all-weather features.

Railroad relocation near Umatilla, Ore.

Building [illegible] in northern Algeria

11 ***Operator comfort*** . . . from an employee relationship standpoint, as well as safety, Tournarocker is an asset to your organization. The big air foam cushion seat eliminates "bounce" . . . no "up and down" ride on these Tournarockers. Pushbuttons on the instrument panel actuate electric motors that eliminate all manual work of steering. Fatigue factors are greatly reduced on Tournarockers. This means increased production for you.

12 ***Insure future earnings*** . . . Behind the Tournarocker prime mover, you easily interchange Carryall scrapers, bottom-dump haulers, cranes, flat-bed trailers. This gives you a plus in insurance of steady earnings in any season and any time. And, any additional trailing unit is available anytime at only approximately 25% of the initial cost! Bulldozer blade or snow plow can also be added on the small "D" for extra profits.

Mail today to: R. G. LeTOURNEAU, INC., Peoria, Illinois

NAME..... TITLE.....

COMPANY.....

STREET.....

CITY..... STATE.....

Type of work.....

- ☐ Send us more information
- ☐ Have Distributor call regarding:
- ☐ 9-ton, 28 m.p.h. Tournarocker
- ☐ 18-ton, 35 m.p.h. Tournarocker
- ☐ 35-ton or 50-ton Tournarocker

LETOURNEAU LET EQUIPMENT

You'll move more ORE for your money, over the years, with a . . . .

MARION 4161

Sixty-five years have taught us what it takes to build REAL shovels . . . how to build qualities into them that don't meet the eye but are eloquent in terms of performance and dependability.

These extra qualities are MORE than worth every penny they cost.

THE MARION 4161 *has made an impressive name over the years . . . one company owns nearly 40 of these machines . . . and another has 30!*

MARION is proud of the 4161 and its record . . . and stands behind this and every other machine that bears the MARION name.

We build good shovels and we back up every MARION owner only for one reason . . . it's the best way to give you more for your money . . . both for today and over the years.

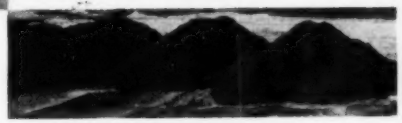
MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

From 3/4 cu. yds. to 45 cu. yds.

LOOK WHO'S GETTING EXTRA "BLACK TOP PAVING" PROFITS...

THE AGGREGATE PRODUCERS!



This is BIG NEWS... aggregate producers have found a way to make more profits from the multi-million dollar paving market. With just a minimum investment, rock producers are gaining sizeable profits by adding an AMALGA-PAVE cold mix asphalt paving material plant to their regular operation.

It's a natural tie-in for your crushed stone operation... many of the basic facilities for producing this fine quality cold-mix, cold-lay asphalt paving material are a part of your present operation. You can assure maximum efficiency from your operating crew, equipment and sales force, because AMALGA-PAVE can be stockpiled far in advance of actual needs. It will not harden until rolled and subjected to traffic. You can make the most of slack time, your salesmen can sell ahead, and you gain an outlet for low value and surplus aggregates as they can be used in the mixing of AMALGA-PAVE.

Your investment is comparatively small because the mixing plant is simplicity itself... no expensive rotary drier, steam boiler, dust collecting system, screens, etc., are needed. The plant actually consists of a conventional weigh box and mixing unit, an asphalt pulverizer and flux oil injection equipment. It is always ready for operation without warm-up periods, etc., and it takes but two men to operate the plant at full capacity. The initial cost is less than ½ the cost of a "hot-mix" plant. George Jacoby of Helena Sand & Gravel Co., Montana, operates his highly profitable AMALGA-PAVE plant in conjunction with his aggregate business. This is typical of how progressive aggregate producers are widening their operations to gain a sizeable chunk of the billion dollar a year paving market. A ready market exists for paving materials... roads, streets, school yards, parking lots, airports, etc. Learn more about an AMALGA-PAVE franchise opportunity... FREE ILLUSTRATED LITERATURE is available on request. Just fill in the coupon below and mail today!

Amalga-Pave

NATIONAL AMALGA-PAVE, INC.
357 S. ROBERTSON BOULEVARD, BEVERLY HILLS, CALIFORNIA

NATIONAL AMALGA-PAVE, INC.
357 S. Robertson Blvd., Beverly Hills, Calif.

Gentlemen:
Please send illustrated brochure telling how I can make money with AMALGA-PAVE.

NAME_____

ADDRESS_____

CITY_____ STATE_____

Easy to Handle and Hook Up
Three Types of Primacord
WIRE COUNTERED PRIMACORD
Wire Countered Primacord is armored with closely stranded brass wire. This wire countering has 2 important advantages:
1. The wires increase the tensile strength of the Primacord to 220 pounds.
2. The wires resist abrasion; protect the Primacord during loading operations, or when it is used in ragged holes.
For these reasons, Wire Countered Primacord is recommended for use as down lines when the going gets rough.
Easy to Handle and Hook Up

WIRE COUNTERED PRIMACORD is in the picture when the going gets *Rough*

Armored to resist highly abrasive conditions, Wire Countered Primacord is recommended for use as *down* lines in deep, ragged holes. The wire countering increases the tensile strength of the Primacord, and gives it added protection during loading operations.

The four grades of Primacord enable the blaster to meet every condition encountered in coal stripping, open-pit mining, quarrying, pipe-line river crossing, marine work, coyote tunnels, etc. Flexible, easy to hook up and handle, waterproof and insensitive to stray electrical currents, Primacord is the ideal detonating agent — the modern way to better output, greater economy.

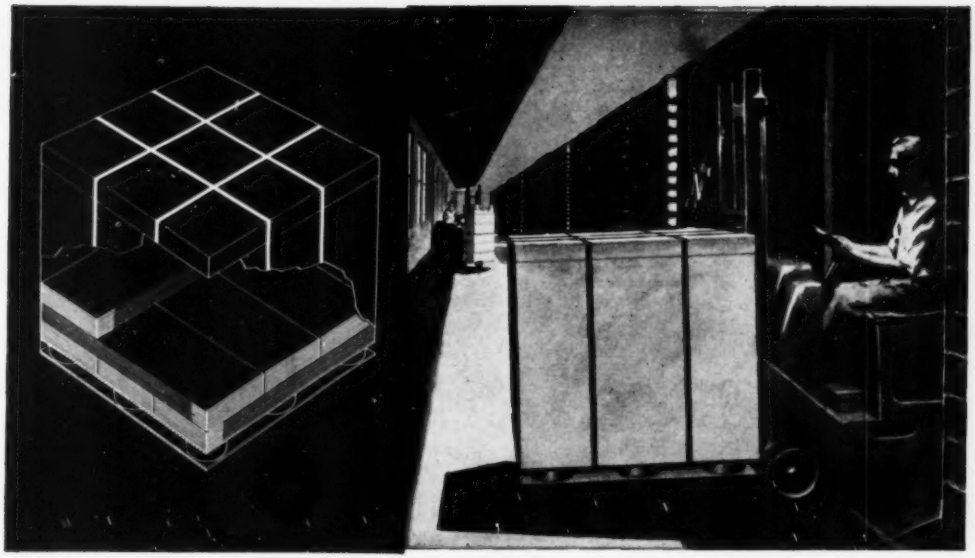
Ask for a copy of the new Primacord Book.

THE ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut P-32

Also Ensign-Bickford Safety Fuse — Since 1836

PRIMACORD-BICKFORD Detonating • Fuse •



Your

Union Multiwall Specialist

will show you how to make Handling Labor more productive

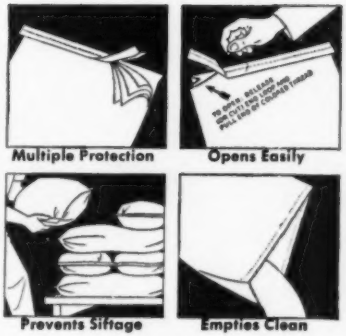
ONE of the hidden costs in packaging is in the handling of packaging materials from unloading dock to warehouse to packaging assembly line.

Thanks to new ways of shipping and handling, many firms now find savings in handling costs alone more than justify a switch to Union Multiwall Bags. The Union Multiwall Specialist who calls on you, can tell you all about the recent cost-cutting developments in handling of multiwall bags.

He'll show you, too, why more than 300 industries now find Union Multiwall Bags cut packaging costs all along the line—in handling, packaging, shipping—yes, and in better product protection, too.

Even if you're now using multiwall bags, the Union representative who calls on you can give you new ideas to save money. For he is backed by the skilled engineers and packaging experts of America's largest maker of paper bags.

Let him show you how Union resources and packaging experience can help you!



UNION Multiwall Bags

UNION BAG & PAPER CORPORATION

233 BROADWAY, NEW YORK 7, NEW YORK

Offices in: CHICAGO, ILL. • MINNEAPOLIS, MINN. • KANSAS CITY, MO. • HOUSTON, TEXAS • BALTIMORE, MD. • ATLANTA, GA.

Here's what WE mean by

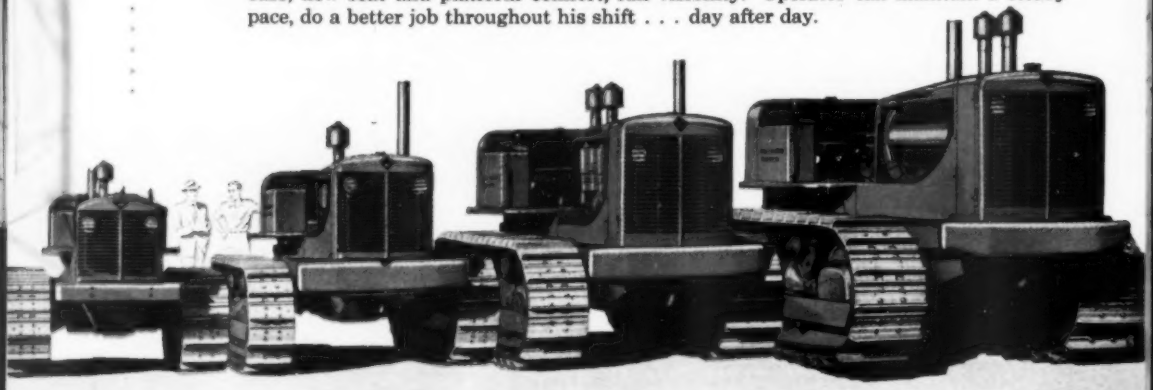
The Newest, Finest Tractor Line on Earth!

DESIGNED FOR YOUR JOB These Allis-Chalmers tractors are *new from the ground up* . . . without compromise anywhere in design or material. They are built to give you outstanding performance on any job, with any equipment—drawn or mounted. Fully matched line of Allied equipment!

BUILT TO "TAKE IT" These are the finest tractors ever built . . . with ample capacity and strength in every part! You can depend on them to take the loads and jolts of today's jobs . . . because they are modern tractors built for the most gruelling operating conditions. They will more than measure up to your expectations!

EASY TO SERVICE Adjustments are easier . . . lubrication simplified and lube periods greatly extended. Mechanics say these tractors are the easiest to service and repair. This all adds up to less down time, more producing time . . . longer tractor life at less upkeep cost.

EASY TO OPERATE Conveniently located controls respond to the slightest effort . . . and are operated in the same familiar way—nothing tricky to "catch on to." There is new shifting ease, new seat and platform comfort, full visibility. Operator can maintain a steady pace, do a better job throughout his shift . . . day after day.



HD-5
40.26 drawbar hp.
11,250 lb.

HD-9
72 drawbar hp.
18,800 lb.

HD-15
109 drawbar hp.
27,850 lb.

HD-20
Hydraulic Torque Converter Drive
175 net engine hp. 41,000 lb.

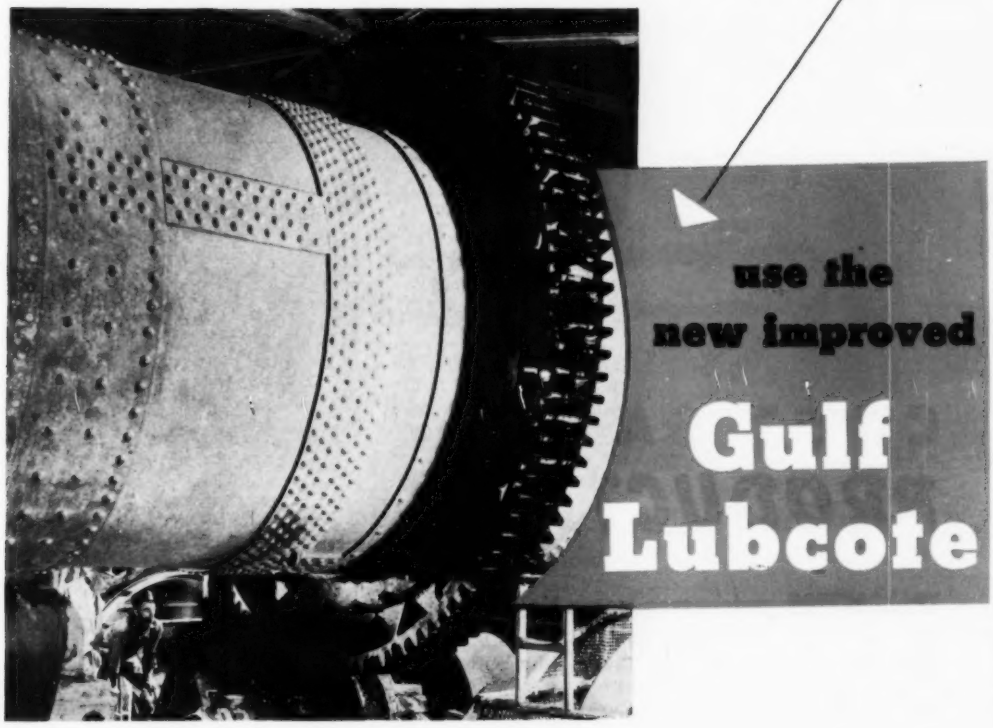
YEARS AHEAD

Each of these new Allis-Chalmers crawlers gives you a new yardstick for rating tractors. Each sets new standards in its class for performance, strength, servicing, operation. Get the full story from your Allis-Chalmers dealer NOW on this — The Newest, Finest Tractor Line On Earth.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

now - for lower cost maintenance of open gears and wire rope



Widely accepted for years as the ideal lubricant for open gears and wire rope, Gulf Lubcote has now been further improved. Greatly increased adhesiveness makes it even more resistant to throwoff and channeling.

Because of its outstanding lubricating qualities, Gulf Lubcote provides maximum protection against wear.

And since its lubricating film is resistant to moisture, fumes, and gases, it prevents corrosion and pitting of metal surfaces. The tough Gulf Lubcote film also withstands extreme temperature changes without drying, cracking, or peeling.

Gulf Lubcote is ideal for noisy open-gear drives —cushions the sliding and rolling action of gear teeth, reducing noise and contributing to worker efficiency.

A Grade for Every Duty

Gulf Lubcote is available in a range of viscosities and consistencies. Selection of the proper grade depends on type of equipment, operating conditions, and method of application. Ask a Gulf Lubrication Engineer for his recommendation. Or send the coupon below for further information.

FIFTY YEARS OF SERVICE
1901 GULF 1951
PETROLEUM AND ITS PRODUCTS

Gulf Oil Corporation · Gulf Refining Company PQ
719 Gulf Building, Pittsburgh 30, Pa.

Please send me, without obligation, a copy of your pamphlet "Gulf Lubcote."

Name.....

Company.....

Title.....

Address.....

COST SAVING PRODUCTION!

Owned by Davis County, Utah, this T7 TRAXCAVATOR *works in a pit near Kaysville, Utah.*

TRAXCAVATOR performance means big production!

The big T7 TRAXCAVATOR above, digs and loads 171 cubic yards of in-place gravel every 50-minute hour! Four six-yard trucks are loaded every seven minutes — that's money saving production!

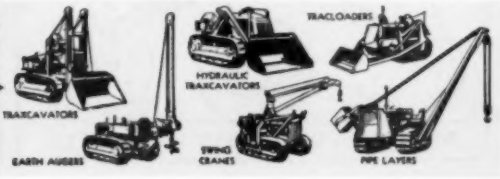
No wasted effort with TRAXCAVATORS — they are ready to go anytime, regardless of weather. Traction-powered crowd of "Caterpillar" Diesel Tractor mates get heaped bucket loads in shot rock, gravel, clay, sand . . . sturdy construction stands up under tough digging conditions . . . one-man operation, plus the use of non-premium fuel, gives low operating costs.

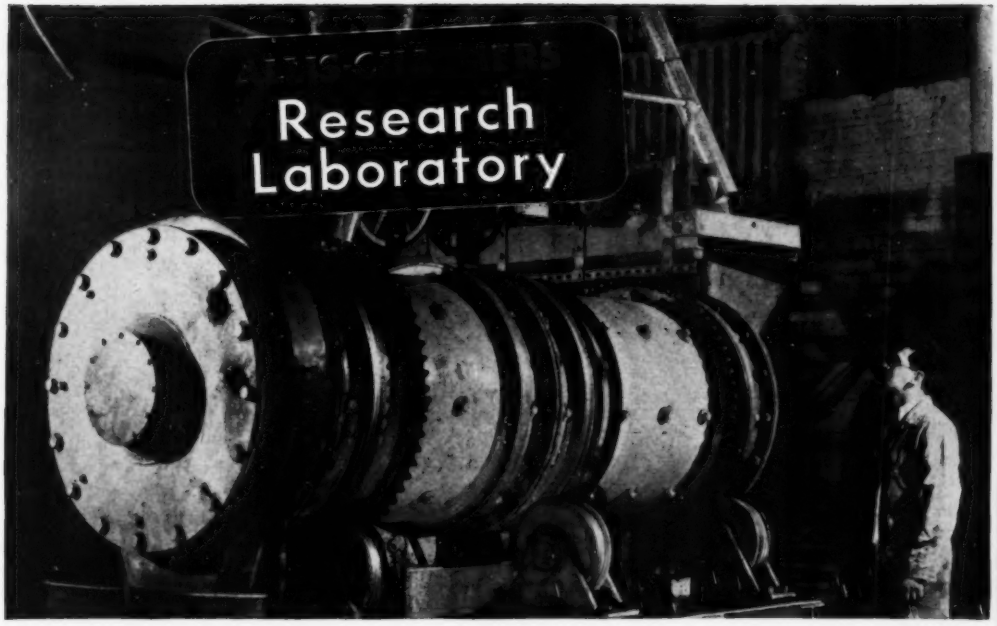
In addition to production tasks, TRAXCAVATORS build and maintain haul roads . . . strip . . . grade . . . work stockpiles . . . clean up. Fast and powerful, their versatility makes them indispensable to pit and quarry operators everywhere.

Ask your nearby TRACKSON-CATERPILLAR Dealer for full information on the size TRAXCAVATOR (5 sizes with ½ to 4 cubic yard bucket capacities) that will fit your needs or write TRACKSON COMPANY, Dept. PQ-111, Milwaukee 1, Wisconsin.

Working stockpiles is one of a list of duties assigned this T4 TRAXCAVATOR. *A variety of attachments fit* TRAXCAVATORS *for many jobs.*

TRACKSON
TRACTOR EQUIPMENT





How Lab Tests Reduced Initial Plant Cost

A PROCESSOR wanted to find a low cost method of crushing and dry grinding lead slag to a carefully controlled product of 98% passing 10 mesh. A method had been worked out previously which would meet these size specifications but which required a considerable amount of costly auxiliary equipment. The customer hoped that a simpler method might be found.

A 20-ton sample was sent to the Allis-Chalmers Research Laboratories for a pilot plant test run. Proper operating conditions were established, and it was proved that the required reduction could be achieved by open circuit dry grinding in an end peripheral discharge rod mill with no auxiliary equipment.

As a result of the Laboratory tests, this company was able to save money on the original plant investment. Simplified plant layout also resulted in low maintenance.

CAN YOU USE THESE FACILITIES?

The Allis-Chalmers Processing Laboratory was established to help you work out profitable solutions to processing problems. It contains modern equipment for batch and pilot mill tests in grinding, crushing, sizing, concentrating, pyro-processing, chemical and physical analysis.

The Laboratory's purpose is to develop new or more efficient processing methods...to determine the economics of a process prior to full-scale operation . . . to provide engineering information to guide in designing efficient plants . . . for virtually any type of industry.

Facilities of the Laboratory are available to anyone in industry. Charges are based on costs. Estimates for test work can be obtained from A-C district offices or from Allis-Chalmers Processing Laboratory, Milwaukee 1, Wisconsin.

A-3484

ALLIS-CHALMERS

Processing Research Laboratory — Dedicated to a Better Utilization of our Raw Materials

Send For Your Copy Today

Laboratory Bulletin 07B6419B

Allis-Chalmers Mfg. Co.
Milwaukee 1, Wis.

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Company .....

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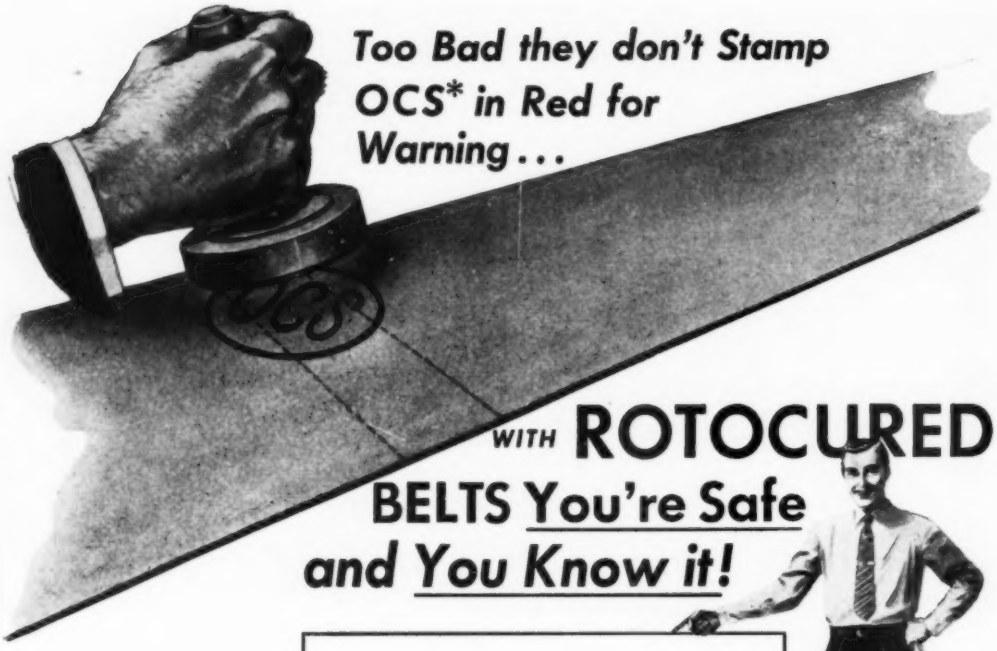
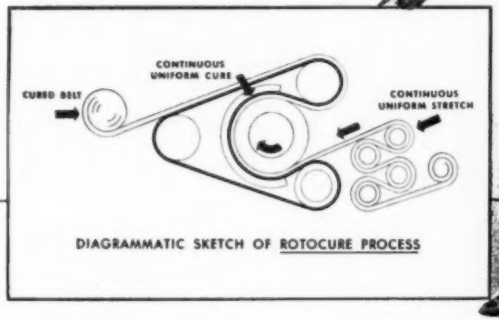


Too Bad they don't Stamp OCS in Red for Warning . . .*

WITH ROTOCURED BELTS You're Safe and You Know it!



DIAGRAMMATIC SKETCH OF ROTOCURE PROCESS

**Overcured Sections — present every 30′ to 40′ in all belts made by the flat press method. Only Rotocuring (continuous, non-stop curing) eliminates this major cause of belt failure.*

When conventionally-made (flat press cured) conveyor belts fail on you early, don't blame the manufacturer or the supplier. Blame the process! These belts are made with *overcured* or *double-cured* segments of 2″ to 4″ width across the entire belt at 30′ to 40′ intervals. They can't be eliminated in flat press curing because they are inherent in this process of "stop and go" vulcanization. As each section is cured, it advances *less than a full press length.* Hence part of sections previously cured get a double treatment which weakens the structure.

In The BWH Rotocure Process, vulcanization is *continuous.* This eliminates overcuring and weakened segments. You get a better conveyor belt in 4 ways:

1 With no overcuring, flex life increases as much as 40%
2 Mechanical distortion at the press ends is eliminated
3 Stretch is constant, uniform
4 Covers are uniformly abrasion-resistant

These four structural advantages mean extra work hours per belt, savings per ton in what you convey and the lowest possible maintenance costs in time and dollars. Ask your BWH distributor, or write us direct.**

**You'll find the advantages of Rotocure in BWH transmissions belts also — plus operation at lower tensions which means longer belt life.

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.

Warehouse Stock, 111 N. Canal St., Chicago, Ill.

BWH
DEPENDABLE RUGGEDNESS

FARRELL-CHEEK'S

INDUSTRIAL CHAIN

Outstanding Qualities

Industrial chains from Farrell-Cheek have a record of superb performance wherever there is material to be conveyed. Designs by experienced engineers, rigid factory controls, and careful manufacture furnish chains that have proven highly dependable under the severest of conditions in the field.

Ideal Steels

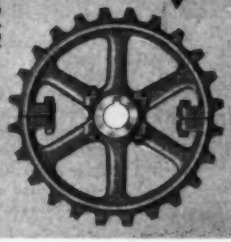
Farrell's "85" is a special analysis steel which has been developed to give the requisites of toughness, strength, rigidity and ductility which are so important in conveying and elevator chains. Cast links of F "85" are exceptionally resistant to abrasive wear and severe loads.

Chain Attachments

Farrell's "85" chain attachments are designed to work in harmony with all Farrell-Cheek cast chains. Manufactured to close tolerances, of the same steels and with the same care as the chains themselves, they are available in a variety of styles or can be designed to fit any special or standard need.

CONVEYOR BUCKETS AND SPROCKETS

Farrell's buckets and sprockets are made in many standard and special patterns . . . tough, strong and rigid . . . unmatched in their ability to give many times longer wear.



FARRELL - CHEEK STEEL CO.

MANUFACTURERS OF HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

FARRELL'S CARBON STEEL CASTINGS
FARRELL'S HARD EDGE STEEL CASTINGS
FARRELL'S "85" STEEL CASTINGS

RAILROAD CASTINGS
Locomotive and Car
R. R. Specialty Castings.

ELEVATOR, CONVEYOR PARTS
Sprockets, Traction Wheels, Chains, Buckets, Rollers, Idlers.

BUSHINGS
Carbon and Alloy Steels Machined, Hardened, Ground.

CRANE WHEELS
Overhead, Gantry, Monorail, Ingot Car, Charging Machine.

GEARS AND PINIONS
"True Tooth" Gears and Pinions, Sheaves and Wheels.

SPECIALIZED CASTINGS
Light Section Castings.

STOKER PARTS
Feed Screws, Furnace Tools, Flanged Pipe, etc.

HEAVY HARDWARE
Wire Rope Fittings, Choker Hooks, Bar Benders, Cutters.

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

SANDUSKY, OHIO U.S.A.

When economy is vitally important...

that Pioneer Edge

How Pioneer equipment did the job

Aggregate consisting of ¾" and 1½" quartzite arrived in bottom dump cars. It was stacked with a PIONEER reciprocating feeder loading a PIONEER 24" inclined belt conveyor equipped with a swiveled chute at its upper end. This either delivered material directly to a 50 foot rock ladder or to one of the two 115 foot 24-inch belts discharging to rock ladders serving the stockpiles. Capacity was 276 tons per hour.

Three gates under each stockpile delivered aggregate to an 18-inch belt which carried it by an underground-overground conveyor to the batch plant 835 feet away.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

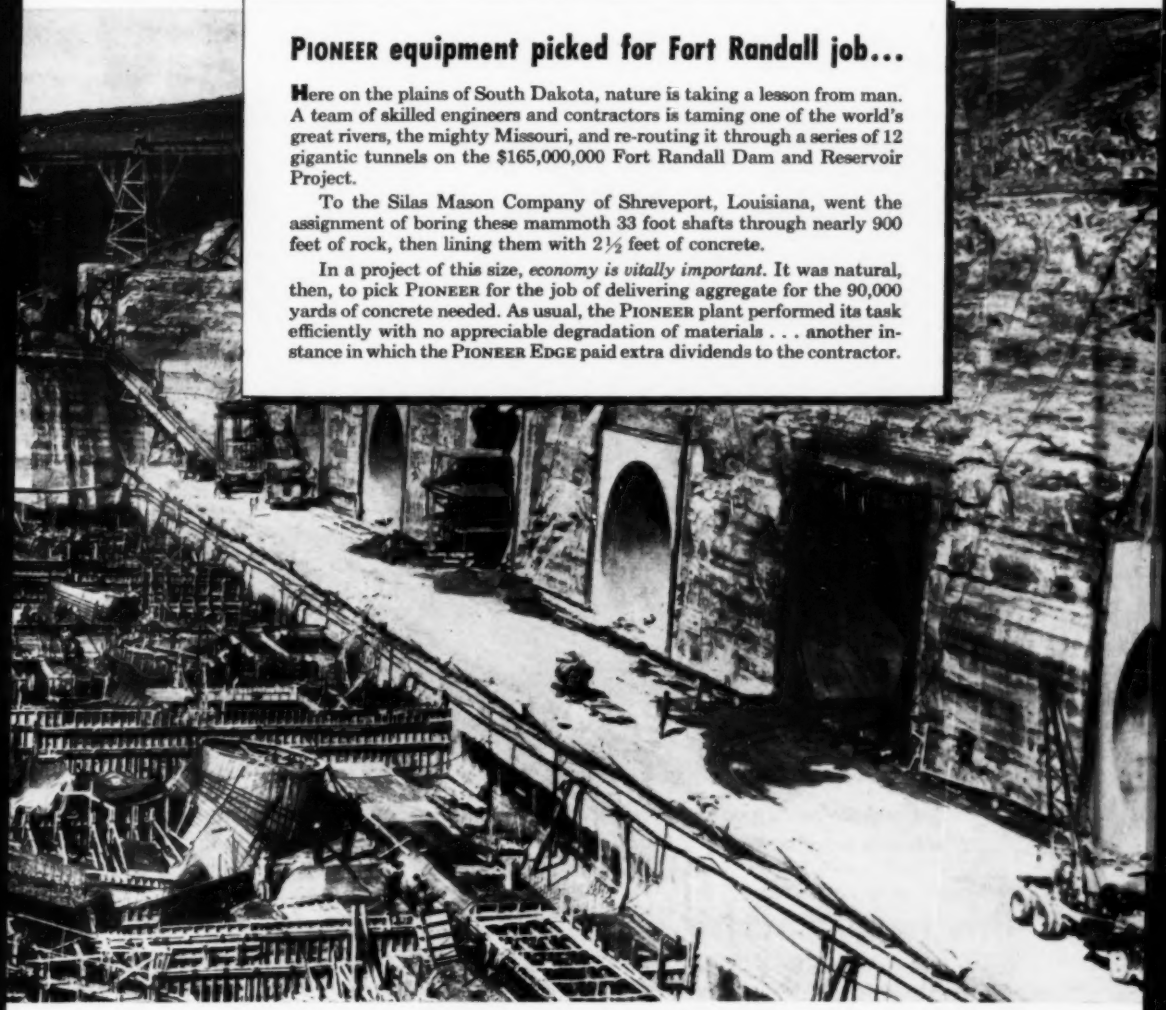
means rock bottom costs

PIONEER equipment picked for Fort Randall job...

Here on the plains of South Dakota, nature is taking a lesson from man. A team of skilled engineers and contractors is taming one of the world's great rivers, the mighty Missouri, and re-routing it through a series of 12 gigantic tunnels on the $165,000,000 Fort Randall Dam and Reservoir Project.

To the Silas Mason Company of Shreveport, Louisiana, went the assignment of boring these mammoth 33 foot shafts through nearly 900 feet of rock, then lining them with 2½ feet of concrete.

In a project of this size, *economy is vitally important*. It was natural, then, to pick PIONEER for the job of delivering aggregate for the 90,000 yards of concrete needed. As usual, the PIONEER plant performed its task efficiently with no appreciable degradation of materials . . . another instance in which the PIONEER EDGE paid extra dividends to the contractor.



What the Pioneer Edge *meant to Silas Mason*

At Fort Randall, PIONEER equipment again showed its exceptional capacity for efficient, low cost handling of sand and aggregate. Especially important was the fact that it eliminated breakage of materials and made it readily possible to adhere to strict government specifications.

"The system functioned economically and we were well satisfied with its performance," reports R. B. Jewell, Silas Mason's Resident Engineer in charge of the project.

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota
SUBSIDIARY OF POOR & COMPANY, CHICAGO

● Please send me information on the equipment checked.

☐ CONTINUFLO CONVEYORS	☐ GRAVEL PLANTS	☐ WASHING PLANTS
☐ MECHANICAL FEEDERS	☐ ROCK PLANTS	☐ BITUMINOUS PLANTS
☐ VIBRATING SCREENS	☐ JAW CRUSHERS	☐ APRON FEEDERS
☐ BUZZER SCREENS (LIGHT DUTY)	☐ ROLL CRUSHERS	☐ ORO FEEDERS

*Name*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

J&L STEEL

SUN MON TUES WED THURS FRI SAT
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30
SET A Scrap Day IN YOUR ORGANIZATION!

Set a definite day . . . soon . . . to start rounding up all the dormant scrap in your operation. Extra scrap is urgently needed to keep mills at expanded steel production.

Here's what's wanted

Steel producers must have scrap over and above the "working scrap" that you normally sell. Broken or obsolete machinery and equipment . . . odds and ends . . . worn out parts—in fact, *all* the iron or steel material that's rusting away in your plant or operation. Get it out of the way . . . get it on its way into production.

Here's what to do

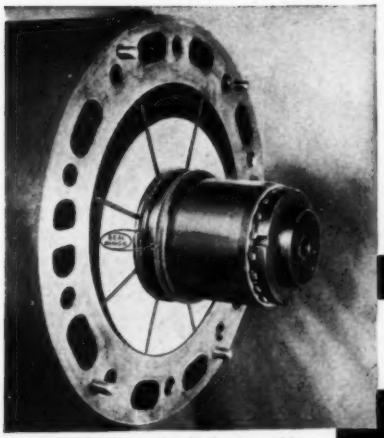
Set a definite day to start . . . make scrap collection the definite responsibility of one man or one group. Call your scrap dealer. He'll take all the scrap you can collect and pay you well for it.

Set YOUR Scrap Day NOW!

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH 30, PA.

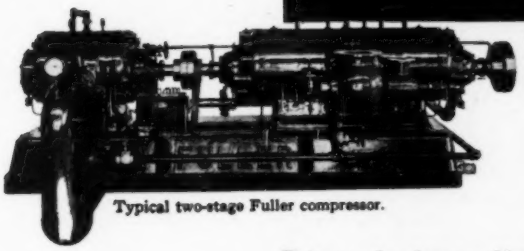
a lot of maintenance men have never seen inside a

FULLER COMPRESSOR



Rotor blades and cylinder assembly.

Accurately balanced, steel rotor with bearings mounted.



Typical two-stage Fuller compressor.

Rotor . . . bearings . . . blades—the only moving parts in a Fuller Rotary Compressor. There you have the three reasons why these compressors keep out of the repair shop. Fuller's efficient "heart" is your guarantee of economical and dependable service.

These are some of the important advantages of the Fuller Rotary—the reasons why thousands of these compressors are quietly and efficiently working for industry today: steady flow—no air-line pulsations, no valves to leak, direct drive from electric motor or internal combustion engine, simple foundation and small floor space, **maintained** capacity and efficiency for the life of the machine.

Whether your requirements call for a single-stage, two-stage or duplex combination, Fuller has the compressor **(to 125 psi. and 3300 cfm)** that will do the job better—longer. Investigate the Fuller Rotary Compressor. Complete information is given in Bulletin C-5. It's yours for the asking.

Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS • COMPRESSORS AND VACUUM PUMPS FEEDERS AND ASSOCIATED EQUIPMENT

FULLER COMPANY
Catasauqua, Pennsylvania
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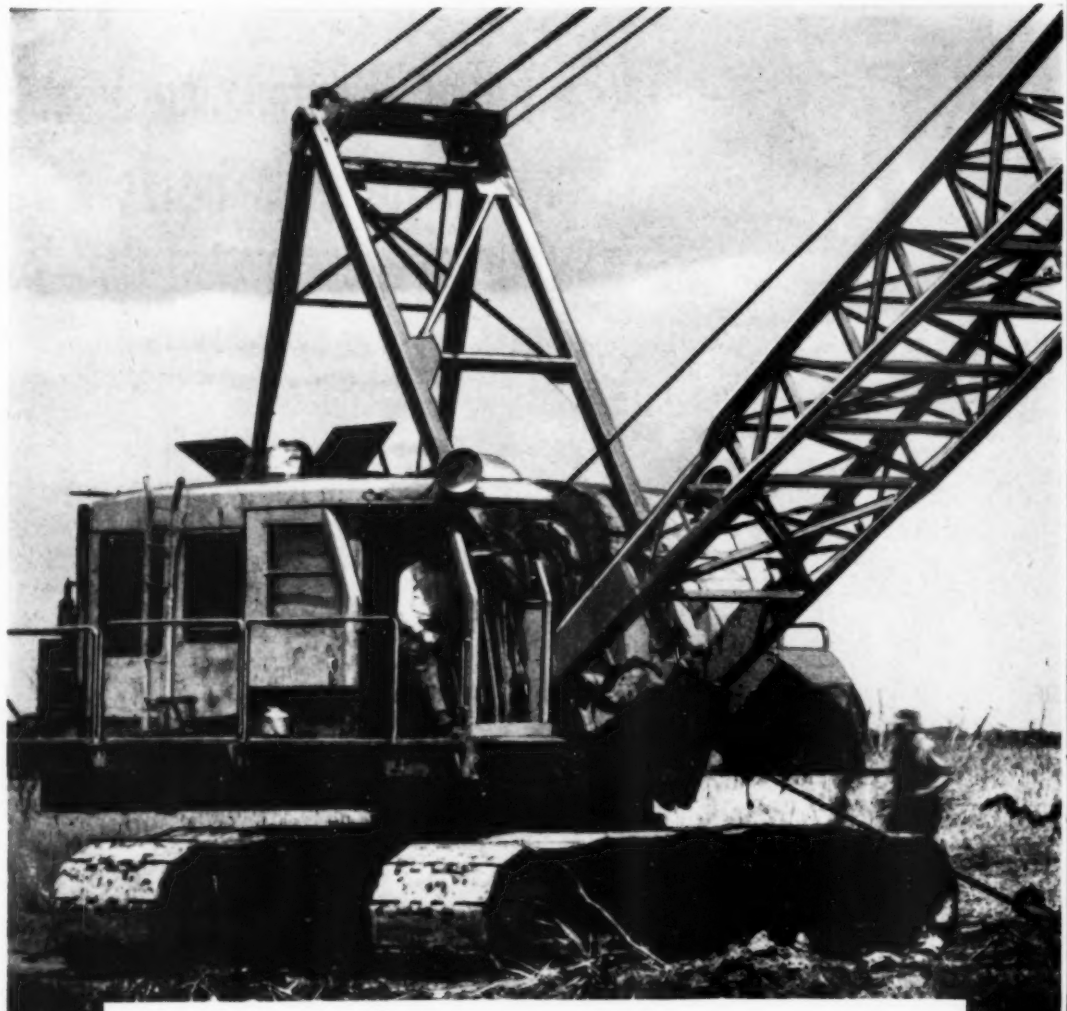
C-217



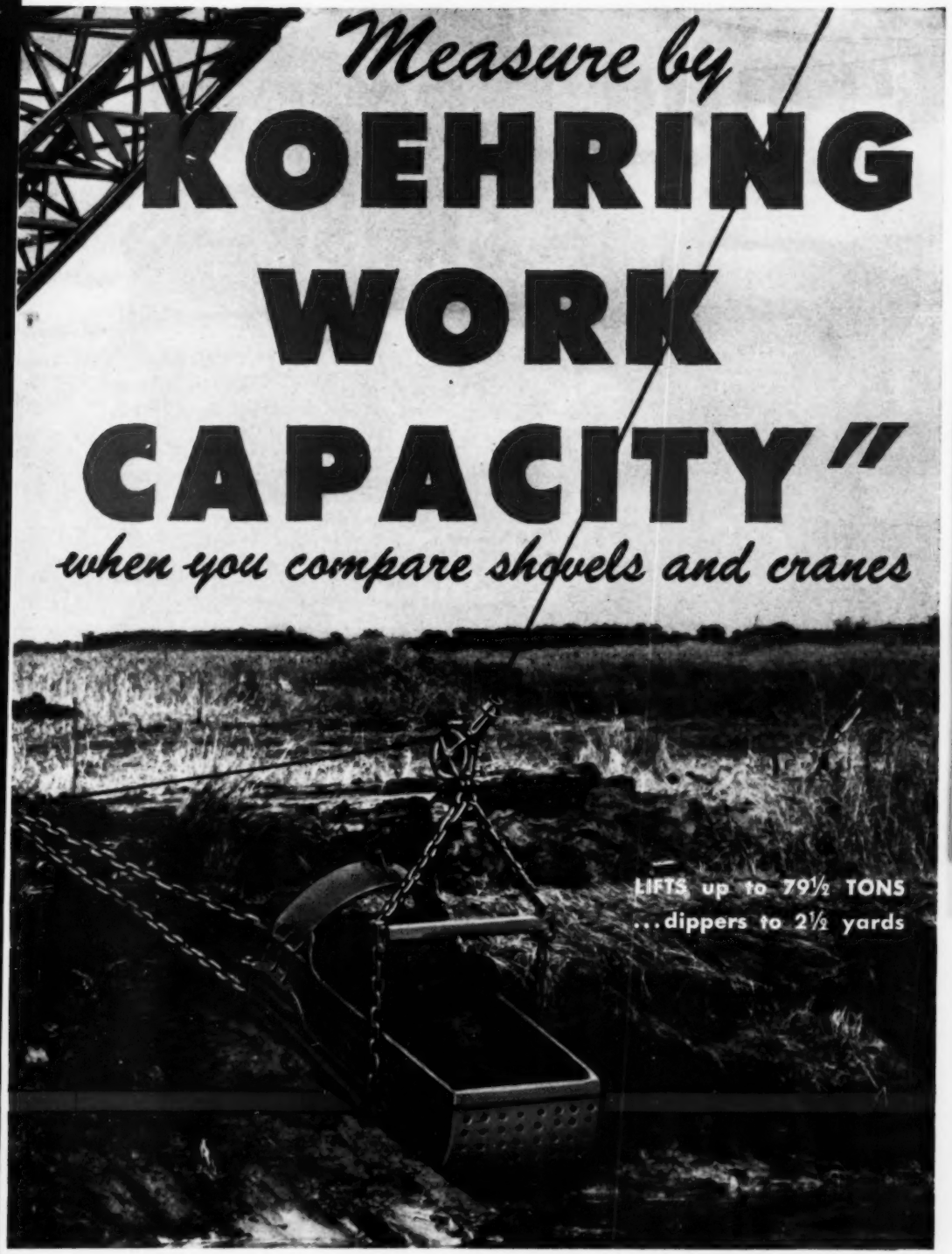
To insure lowest cost per yard moved, or ton lifted . . . compare all excavator and crane information with "KOEHRING WORK CAPACITY". Your Koehring distributor has specific figures that will let you prove for yourself the biggest profit-earning value.

K124

KOEHRING HEAVY DUTY

KOEHRING COMPANY
Milwaukee 16, Wis.

Subsidiaries: PARSONS • JOHNSON • KWIK-MIX


Measure by
KOEHRING
WORK
CAPACITY"
when you compare shovels and cranes
LIFTS up to 79½ TONS
...dippers to 2½ yards

2,092 *Traylor* CRUSHERS

. . . a "world of experience" in solving crushing problems

The Traylor Crusher of today represents 50 years of refinement and development. The hundreds of Traylor Crushers now in service have proven the soundness of Traylor's many advanced design features.

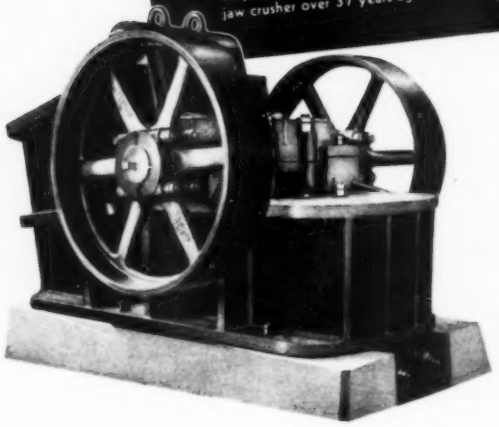
Traylor's experience is as *broad* as it is *long*. In serving a worldwide list of customers, Traylor has met . . . and mastered . . . many widely different production problems.

There's no substitute for experience . . . that's why there is no substitute for a Traylor Crusher.

TRAYLOR ENGINEERING & MANUFACTURING CO.
408 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York, Chicago, Los Angeles
Canadian Mfrs.: Canadian Vickers, Ltd., Montreal, P. Q.

466 GYRATORY CRUSHERS ranging in size up to 60", are located all over the United States, Canada, Mexico, South America, Asia and South Africa.

604 JAW CRUSHERS in sizes up to 66" x 86" have been built by Traylor for leading producers throughout the world. Traylor built the first 66" x 86" jaw crusher over 37 years ago.



TRAYLOR PIONEERED THE USE OF CURVED CRUSHING SURFACES

One of Traylor's biggest achievements has been the development of curved crushing surfaces for both jaw and gyratory crushers.

Briefly, this revolutionary design: 1. eliminates choking and packing; 2. reduces power requirements; 3. greatly increases capacity; 4. increases plate life in jaw crushers as much as 3 to 1.

Curved crushing surfaces are standard equipment on *all* Traylor Crushers. Complete details are included in all Traylor Crusher bulletins.

1030 REDUCTION CRUSHERS
like Traylor gyratories, are located all over the world. They range in size up to 5'-6". have been widely accepted by operators everywhere.

Before you buy, see a Traylor at work

Chances are that there is a Traylor Crusher now operating within driving distance of your plant. Drop us a line and we will forward complete details on the nearest Traylor installation. Take time to see for yourself why others prefer Traylor most.

A PARTIAL LIST OF A FEW OF THE LARGER TRAYLOR

Jaw and Gyratory Crushers now in use throughout the world...

GYRATORY CRUSHERS

1. Two 60" Gyratory Crushers in a Limestone plant.
2. One 60" Traylor Gyratory in this large Southwest copper plant.
3. A big 60" Gyratory in the plant of a leading English Limestone producer.
4. 3—54" Traylor Gyratories in Canadian Cement plants.
5. A 54" Gyratory operated by a large Canadian Nickel producer.
6. A 54" Traylor Gyratory in a Mexican Copper plant.
7. A 54" Gyratory in an English Cement plant.
8. A 48" Traylor Gyratory in the Northwest.
9. A 42" Gyratory operated by a large Eastern Mining company.
10. A 42" Gyratory operating in a large Eastern Trap Rock plant.

JAW CRUSHERS

11. 2—48" x 60" Traylor Jaw Crushers in the plant of a leading Canadian Asbestos producer.
12. 7—42" x 66" Jaw Crushers in the Canadian plant of a well known Nickel producer.
13. A 56" x 72" Traylor Jaw Crusher can be seen in Newfoundland.
14. A 54" x 84" Jaw Crusher in large Iron Ore development in Venezuela.
15. Two 60" x 84" Traylor Jaw Crushers are now on a big job in Europe.

a "Traylor" leads to greater profits

Traylor

Rotary Kilns, Coolers and Dryers · Grinding Mills · Crushing Rolls · Jaw, Reduction and Gyratory Crushers · Apron, Grizzley, Slurry and Table Feeders

NOPCO ERTRANE C

MEETS ALL REQUIREMENTS OF ASTM SPECIFICATION C226-50T

—which means that it is a fully accredited air-entraining agent for use in the manufacture of air-entraining cement made in conformance with:

ASTM SPECIFICATION C175-50T

(the specification that reflects the current policy of Committee C-1, as adopted on September 26, 1950)

Ertrane C has been subjected to rigid tests in the qualified laboratories of E. L. Conwell & Co., Philadelphia, and has met all eight requirements of C226-50T in regard to its effect on the properties of portland cement — actually *surpassing the required standards by impressive margins in virtually every instance.*

Here are some of the important results obtained (using test specimens made and cured as specified in ASTM C192-44T):

Compressive Strength of Concrete, p.s.i. — 6" x 12" cylinders

Cement Content	Type Cement	After 1 Year (av. for 3 tests)	% Strength of Concrete made with cement using Ertrane C	
4.0 Bag Mix	I	3650		
	IA	3570	98%	
	II	3290		Requirement: 85% min.
	IIA	3030	92%	
	III	3785		
	IIIA	3375	89%	
6.0 Bag Mix	I	5085		
	IA	5005	99%	
	II	4640		Requirement: 85% min.
	IIA	4330	94%	
	III	5185		
	IIIA	4700	91%	

NOPCO EVOLVED THRU RESEARCH

NOPCO CHEMICAL COMPANY

Branches: Boston • Chicago

Flexural Strength of Concrete, p.s.i.—3" x 4" x 16" beams				
Cement Content	Type Cement	After 6 mos. (av. for 4 tests)	% Strength of Concrete made with cement using Ertrane C	
4.0 Bag Mix	I	625		
	IA	638	102%	
	II	725		Requirement: 85% min.
	IIA	650	90%	
	III	810		
	IIIA	735	91%	
6.0 Bag Mix	I	775		
	IA	788	102%	
	II	888		Requirement: 85% min.
	IIA	863	97%	
	III	1025		
	IIIA	900	88%	

Resistance to Freezing and Thawing

Test specimens: 3" x 4" x 16" beams—5.5 bags of cement per cu. yd.

Specimens cured 28 days moist, and 48 hours immersed in water at 73.5°F. Completely immersed in water during freezing and thawing cycles.

10 cycles per day automatically controlled 0°F. to 40°F.—center of specimen temperature recorded.

Per Cent Change in Dynamic Modulus Cycles (average 3 beams)								
Cement	25	50	75	100	125	150	200	Flexural Strength (one beam)
I	4	7	13	18	24	28	49	358
IA	1	2	2	4	5	6	8	563
II	2	6	16	26	32	36	44	420
IIA	2	2	5	9	10	10	11	630
III	6	15	18	21	29	40	51	400
IIIA	5	5	6	7	7	9	10	672

● **All the foregoing results prove conclusively that air-entraining portland cement employing Nopco Ertrane C assures concrete of *good strength* and *excellent durability*.**

LOOK AT THESE ADVANTAGES

In addition to imparting *excellent durability* to concrete, Ertrane C affords outstanding advantages to both the cement manufacturer and the cement user. For example:

EASY, ECONOMICAL HANDLING. It is only necessary to add Ertrane C to water and stir until dissolved. No control testing required. Result: Considerable savings in time and labor at the mill.

IMPROVED PLASTICITY. Ertrane C provides durability and plasticity (through air formation), and also imparts highly desirable qualities that *increase workability and placeability.*

IMPROVED WATER REPELLENCY AND STORAGE LIFE. In view of its composition, Ertrane C gives *more water repellency* than straight resin soaps. This characteristic helps to prevent cement from caking in storage.

GOOD COST/PERFORMANCE RATIO. On a cost/performance basis, Ertrane C is more *economical* than any air-entraining agent on the market.

Ertrane C is immediately available, in any quantity, from Nopco's plants at Harrison, N. J., Chicago, and Cedartown, Ga.

Fill out the attached coupon. We shall gladly send you full information, and make recommendations based upon your particular requirements.

Harrison, New Jersey

Cedartown, Ga. • Richmond, Calif.

NOPCO CHEMICAL COMPANY
Harrison, New Jersey

Gentlemen:

I am interested in learning more about Ertrane C. Will you kindly—

☐ send me further details—including full report of tests made by the E. L. Conwell Co. laboratories.

☐ have your representative call.

Name_____ Title_____

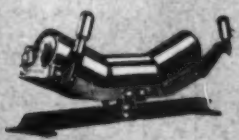
Company_____

Address_____

City_____ Zone____ State_____

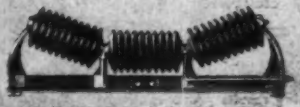
THERE'S A *Continental* IDLER for every purpose

STANDARD DUTY IDLER



SELF-ALIGNING TROUGHING IDLER

SELF-ALIGNING RETURN IDLER



RUBBER DISC IMPACT IDLER

FLAT ROLL

SELF-ALIGNING FLAT BELT IDLER

FLAT BELT IDLER

HEAVY DUTY IDLER

GRAIN FLAT BELT IDLER

PICKING TABLE IDLER

GRAIN CONCENTRATOR IDLER

UNIT STAND IDLER

Belt conveyors are used for handling many types of material. For this reason, Continental manufactures a variety of Idlers, each designed to best take care of a particular application.

When ordering your next Belt Conveyor, specify Continental Idlers and take advantage of our complete line.

Most standard size Idlers can be shipped FROM STOCK. Other sizes can be shipped promptly.

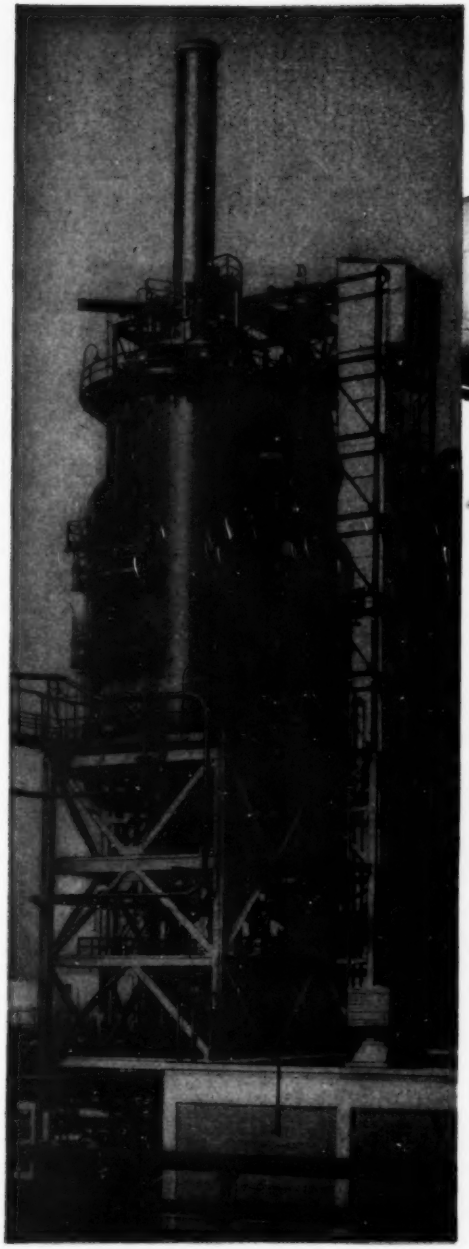
Specify Continental

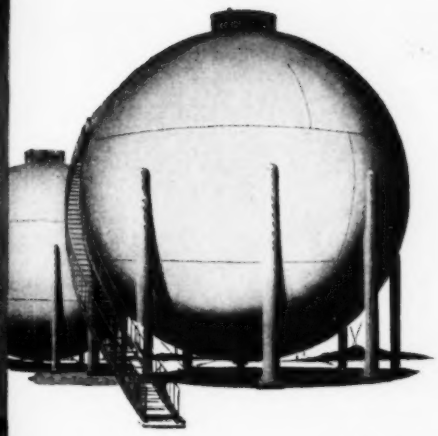
INDUSTRIAL DIVISION

CONTINENTAL GIN COMPANY

BIRMINGHAM, ALABAMA

ENGINEERS CGC ATLANTA • DALLAS • MEMPHIS • NEW YORK CGC MANUFACTURERS





. . . again
up steps progress
in petroleum

ACTIVITY NO. 1 at Cities Service is to keep right up to *today*.

One of the most recent steps of Cities Service progress reaches skyhigh over East Chicago today. The Cities Service refinery there is now topped by a huge new unit of the latest type for catalytic refining. Improvements extend to the refinery's new gasolene treating equipment, gas purification unit, and gas recovery system. Many other modern structures, including the new "spheres" for storage of highly volatile hydrocarbons, all enter into that new look today at East Chicago.

There as elsewhere, progress by Cities Service results in products of excellence, and service to match. Consequently, users of petroleum products for industry, commercial transport, farming, and motoring can be sure of receiving top quality when ordering from Cities Service.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

TELSMITH®

NEW Tyrone Rock Products Co. plant PRODUCES 3000 TONS A DAY at low cost...with TELSMITH Conveying and Screening Equipment

TELSMITH Equipment in this Plant

One (1) 5′ x 12′ Pulsator Single Deck Scalping Screen

One (1) 5′ x 12′ Pulsator Double Deck Scalping Screen

One (1) 4′ x 10′ Pulsator Double Deck Rinsing Screen

Eight (8) 5′ x 12′ Vibro-King Single Deck Finishing Screens

Two (2) 4′ x 10′ Vibro-King Single Deck Finishing Screens

Twelve (12) Telsmith-BG Conveyors 18″ to 42″ wide, 42′ to 200′ long

Fifteen (15) 16″ x 18″ Bin Gates Boquad Tunnel Type

• To serve the rapidly growing Atlanta market, this modern plant at Tyrone, Ga., is a remarkably efficient, low-cost operation. Designed and engineered by Telsmith, its average capacity is about 300 tons per hour with peaks of 450 tons. Highly efficient screening is supplied by 13 Telsmith vibrating screens making 8 sizes of crushed granite (−2″ to −8 mesh) for railroad ballast, and concrete and asphalt construction.

Finished sizes are stockpiled over a reclaiming tunnel, then rinsed and delivered to bins for loading cars and trucks. Telsmith did all engineering, including detailed drawings, furnished all screens and conveyors and carefully co-ordinated all equipment for smooth, efficient operation. To relieve yourself of technical details and to be sure of satisfactory results, consult Telsmith without obligation. Send for Bulletin 266.

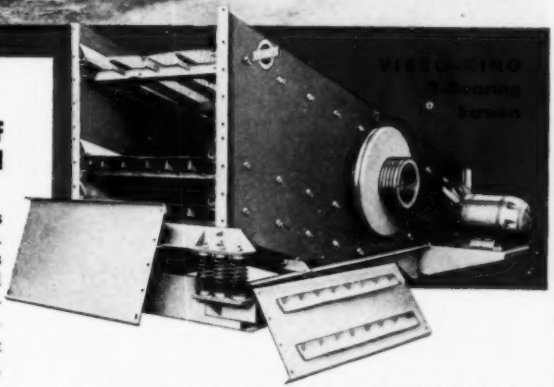
SMITH ENGINEERING WORKS
504 EAST CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

ENGINEERED

VIBRO-KING

For Finished Screening of Medium and Small Sized Aggregate

With its two bearings, the Vibro-King is simpler, more efficient, and upkeep is lower. Telsmith-patented automatic counter-weights assure smooth starting and stopping as well as exceptionally smooth operation. Its circular screening movement is uniform everywhere on the screen cloth, and is constant under any load. Entire vibrating mechanism, including vibrating unit and screen cloth, floats on nests of springs. Welded and reinforced main frame is *horizontal* for rigidity and easy installation. Cable suspension, if desired. Five sizes, 1, 2, or 3 decks.



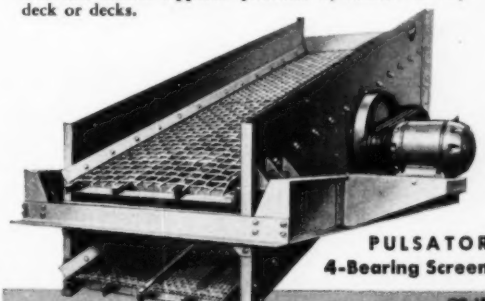
Changing Screen Cloth is Simple and Quick — The upper end of the Vibro-King is readily removable, making it a much easier job to change screen cloth and saving a great deal of time.

Screen Cloth Mounting—At customer's option — screen cloth may be mounted in rubber on steel screen trays; or stretched over steel screen supports—protected by rubber—on any deck or decks.

PULSATOR

For Heavy-Duty Scalping

A four-bearing, heavy-duty vibrator . . . for all kinds of screening, especially scalping, or large sized aggregate . . . Pulsator's circular movement gives uniform, efficient screening on all decks and under heaviest loads. The best alloy steels, the finest anti-friction bearings, protected by both labyrinth and piston ring seals, give longer life and lower upkeep. Eleven sizes, with 1, 2, or 3 decks.



PULSATOR
4-Bearing Screen

QB-12

Cable Address: Bangworks, Milwaukee

51 East 42nd St. New York 17, N.Y. — 211 W. Wacker Drive Chicago 6, Ill. — 713 Commercial Trust Bldg. Philadelphia 2, Pa. — 235 Main Street Cambridge 42, Mass. — Bacheck Equipment Co. Milwaukee 2, Wis. — A. N. Wiglo, 894-8 N. Roosevelt Ct. Columbus 9, Ohio

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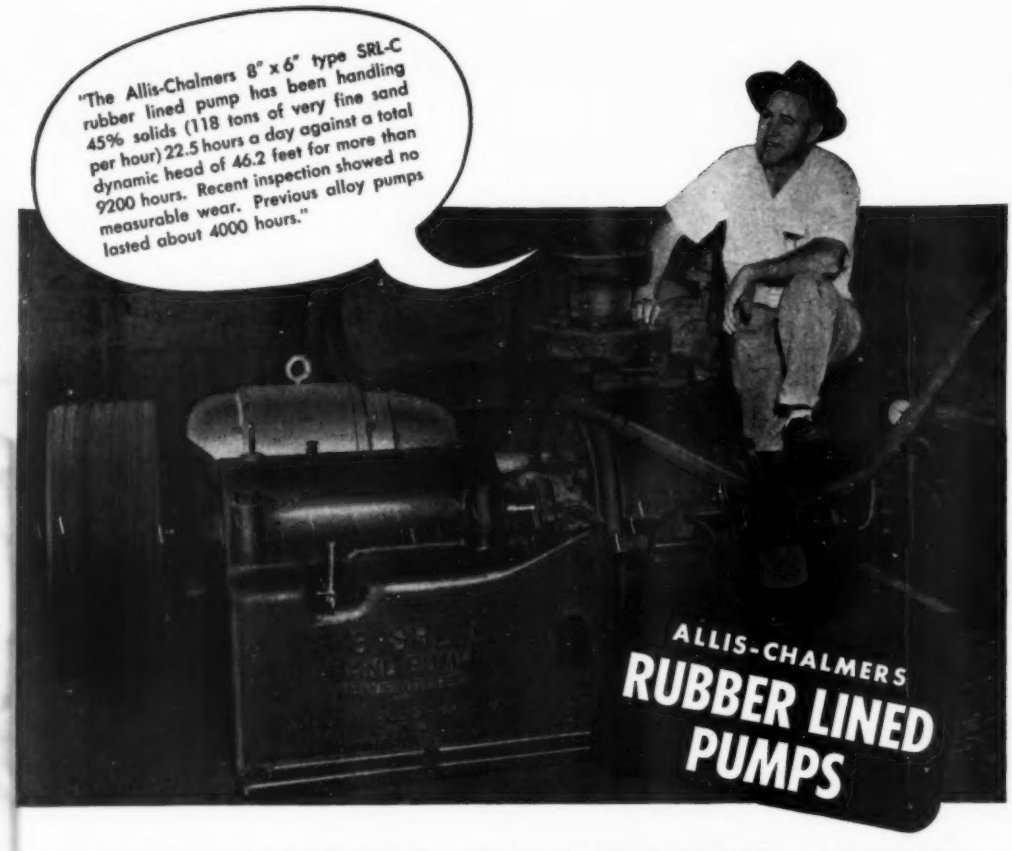

"The Allis-Chalmers 8" x 6" type SRL-C rubber lined pump has been handling 45% solids (118 tons of very fine sand per hour) 22.5 hours a day against a total dynamic head of 46.2 feet for more than 9200 hours. Recent inspection showed no measurable wear. Previous alloy pumps lasted about 4000 hours."
ALLIS-CHALMERS
RUBBER LINED
PUMPS

9200 HOURS HANDLING SAND

"No Wear"

HANDLING FLORIDA SAND mixed with rutile, ilmenite, zircon and monazite will grind any metal pump to pieces in short order. But this Allis-Chalmers rubber lined pump has been operating for more than a year with no measurable wear. 10 to 50 times the service life of the best metal alloy pumps is not an uncommon record.

Special Compounds Used

Rubber lining compounds are especially engineered for each application. Linings are bonded to steel frames and not to the pump body. Linings may be replaced without removing the pump from its location. The impeller is equally easy to remove and replace.

If you are pumping fine mesh, hard, abrasive materials (⅛" to 325 mesh size), you may find that an Allis-Chalmers SRL rubbed lined pump will mean longer life and lower costs per gallon pumped. Ask your nearby Allis-Chalmers District Office representative, or write Allis-Chalmers, Milwaukee 1, Wis. and ask for Bulletin 08B7311.

A-3476

ALLIS-CHALMERS

What's behind the Euclid name?

Engineered...for the Job

Of simple design and rugged construction, Euclids are engineered and built specifically for moving earth, rock, coal and ore in off-the-highway service.

There is a Euclid model to meet every requirement in off-the-highway work, and body designs for all types of materials. Capacities of Rear-Dump "Eucs" range from 10 to 34 tons, with diesel engines of 125 to 400 h.p. Top speeds with full payload up to 35.7 m.p.h. . . . semi-rigid or spring mounted drive axle, five or 10 speed transmission.

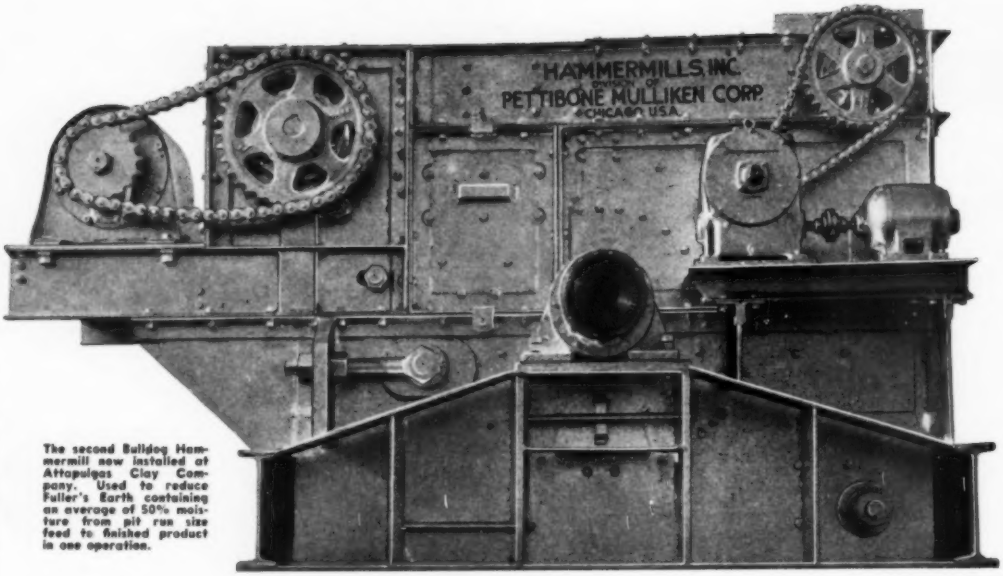
Bottom-Dump Euclids range in capacity from 13 to 25 cu. yds., have diesel engines of 190 to 300 h.p. . . . top speeds loaded up to 34.4 m.p.h.

Also job proved for high production at low cost are the Euclid Loader and the Euclid Scraper. Write for complete information on the Euclid line of earth moving equipment or call your distributor.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

MORE LOADS PER HOUR—
MORE PROFIT PER LOAD

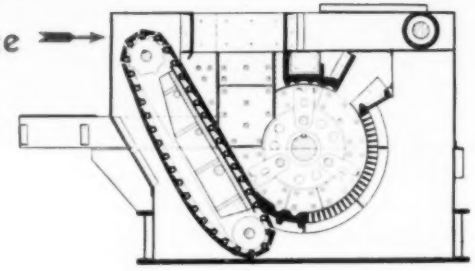
EUCLIDS *Move the Earth*



The second Bulldog Hammermill now installed at Attapulgus Clay Company. Used to reduce Fuller's Earth containing an average of 50% moisture from pit run size feed to finished product in one operation.

BULLDOG HAMMERMILL

with Moving Breaker Plate



For wet, sticky material reduction . . . for those tough, heavy-duty crushing jobs.

Illustrated above is the last word in Moving Breaker Plate Hammermill design. It is built by an engineering organization whose experience far surpasses any organization that might furnish Moving Breaker Plate crushing equipment.

Design Improvements have increased reduction efficiencies and lowered H.P. requirements. You can see this equipment in operation at any time. Also Hammermills will gladly survey your reduction requirements and recommend the proper equipment without cost or obligation. Just write or call.

Bulldog Hammermills are built in capacities up to 1000 tons per hour for every purpose: for primary, secondary, fine reduction of materials such as limestone, shale, Fuller's Earth, phosphate muck, phosphate mud balls, iron ore, oyster and clam shells, any reducible material.

HAMMERMILLS, INC. *division of* **PETTIBONE MULLIKEN CORP.**

4760 W. Division St. Chicago 51, Illinois Phone SPaulding 2-9300

IT COSTS LESS TO OWN THE BEST!

View From Kiln Feed Platform Between The Kilns

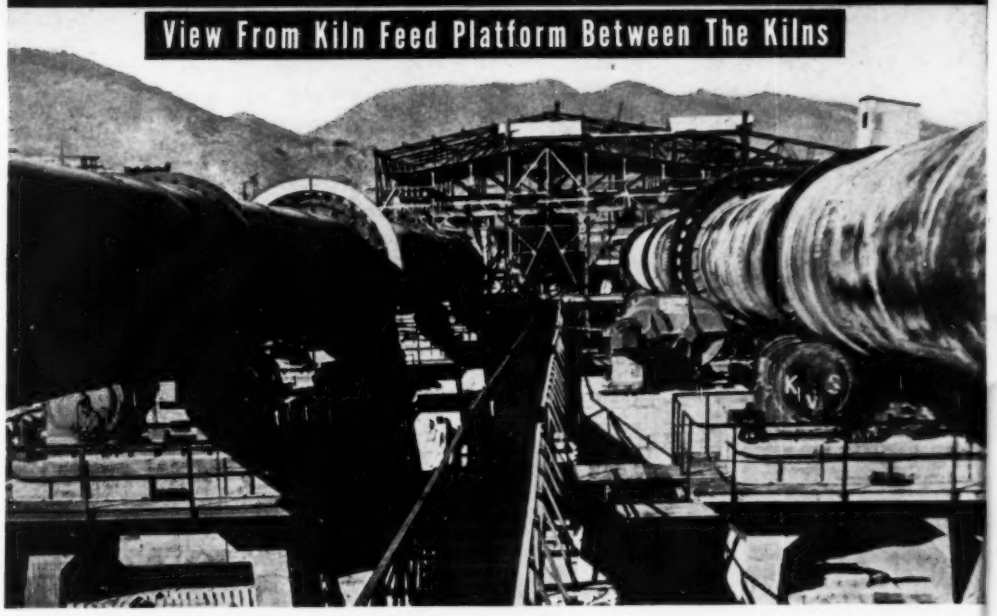


ILLUSTRATION SHOWS TWO LARGE KVS KILNS WITH SELF-ALIGNING BEARINGS

GREATER CAPACITY OBTAINED THAN THAT FOR WHICH KILNS WERE SOLD

KENNEDY KILNS ARE BUILT TO LAST

featuring:

ALL-WELDED SHELLS WITH SPECIAL THICK SECTION UNDER TIRES

CARRYING ROLLERS MOUNTED IN OVERSIZE SELF-ALIGNING BEARING TO GIVE LOW SPECIFIC BEARING PRESSURE.

Let a KVS engineer review your plant needs and recommend the proper design and size kiln to meet your needs. Long life and dependable service distinguish all KVS products. It's the users who say "It Costs Less To Own The Best."

Let K V S furnish complete equipment for your Cement Plant from Crusher to Bagger and have one responsibility.

Send for bulletin describing KVS Kilns, Coolers & Dryers

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y. **FACTORY: DANVILLE, PA.**

IT COSTS LESS TO

MORE AND BETTER LIME

WITH KENNEDY "ENGINEERED" PRODUCTION EQUIPMENT

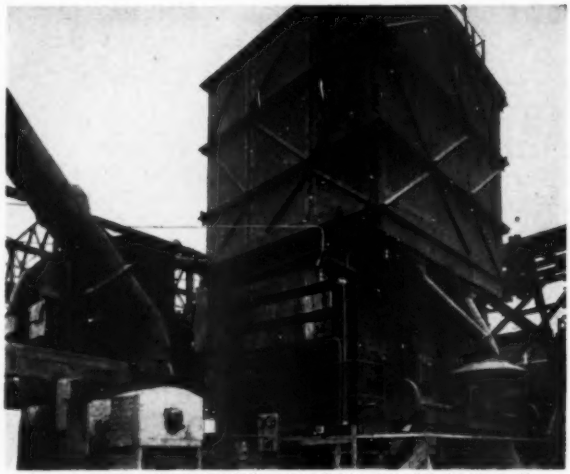
The present Kennedy Preheater, Soaking Pit and Deheater is the result of exhaustive tests designed to increase Thermal efficiency. Actual operation has established fuel savings up to 40% with an increase in output of 20%.

Among the improvements incorporated in this revolutionary system are virtual elimination of ring formation. Hot stone, entering the rotary section, deposits an even coating of lime on the firebrick from feed end to calcining zone.

Preheater serves as a dust collector. Based on the stone feed, up to 2% of dust is recovered. Lower kiln temperatures result in longer refractory life. Hot zone liners now last up to two years.

Due to the absence of moving parts, wear is practically eliminated and maintenance costs are negligible. Savings up to 20% in kiln efficiency are recorded with use of the Kennedy Preheater in comparison to operating costs of kilns without the Preheater.

This lime production system produces more and better lime . . . faster . . . consistently and at lower cost than any previous model. It typifies our claim that "It Costs Less To Own The Best!" Investigate this IMPROVED lime production process without obligation.



• A view of the preheater installation at the Duluth plant of Cutler-Magner Co.

• A view of Kennedy Preheater installation at plant of Lee Lime Corporation, Lee, Mass.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

OWN THE BEST!

KENNEDY PREHEATER, SOAKING PIT & DEHEATER

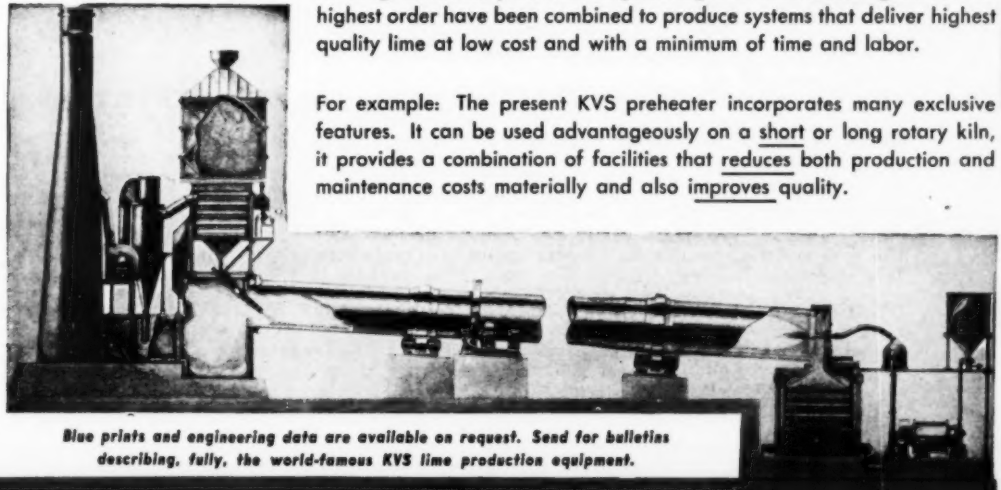
RECOVERS AND UTILIZES EXIT GASES
NO MOVING PARTS . . . NO MAINTENANCE COSTS
ELIMINATES ALL OVERBURNING OR UNDERBURNING
HEAT RADIATION HELD TO A MINIMUM
QUICK ADJUSTMENT . . . EASE OF CONTROL
UNIFORM OPERATION, ALL STONE RECEIVES SAME TREATMENT

Increases capacities up to 20%

Shows fuel savings up to 40%

KVS Lime production equipment has established a world-wide reputation for long, satisfactory service. Engineering and manufacturing skill of the highest order have been combined to produce systems that deliver highest quality lime at low cost and with a minimum of time and labor.

For example: The present KVS preheater incorporates many exclusive features. It can be used advantageously on a short or long rotary kiln, it provides a combination of facilities that reduces both production and maintenance costs materially and also improves quality.



Blue prints and engineering data are available on request. Send for bulletins describing, fully, the world-famous KVS lime production equipment.

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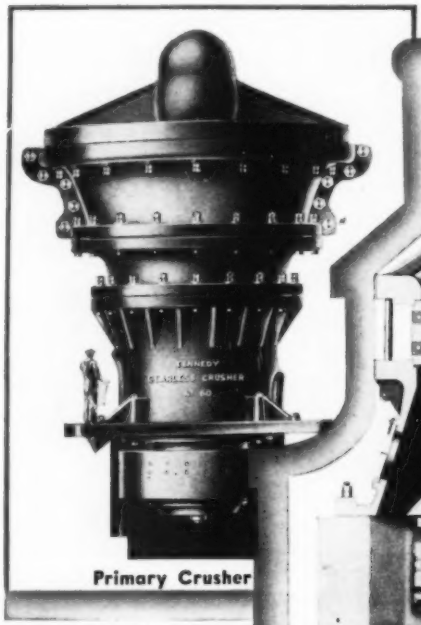
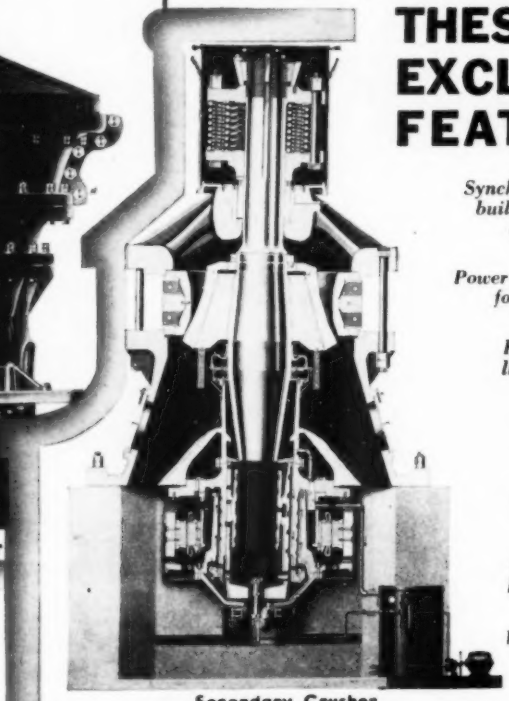
IT COSTS LESS TO OWN THE BEST!



Primary Crusher



Secondary Crusher

NOW . . . CONSIDER THESE KVS EXCLUSIVE FEATURES

Synchronous motor built into pulley assembly

•

Power applied ONLY for crushing

•

Force-feed lubrication

•

No gears to waste power

•

Added power at no added cost

•

Quiet — smooth Frictionless action

•

Varying capacities to serve every purpose

ROLLER BEARING GEARLESS GYRATORY CRUSHERS

CRUSHERS . . . BUILT WITH THE RUGGED STAMINA OF A HEAVY TANK

KVS GYRATORY CRUSHERS are designed and built to give years of satisfactory service, even under severe operating conditions. This important fact is being proved, year-after-year, in numerous crushing plants throughout the world.

THE ENGINEERING PRINCIPLES which make them such outstanding machines, are backed by manufacturing skill and the use of steel and other materials that cannot be excelled. In addition to dependable operation, their rugged stamina holds repair costs to a minimum and maintains production schedules.

IT'S THIS KIND OF A UNIFORM PERFORMANCE record that sets KVS crushers apart and explains WHY users agree that "It Costs Less To Own The Best." If you are interested in a proved method of increasing both production and profits, let a KVS engineer study your problem and suggest his plan.

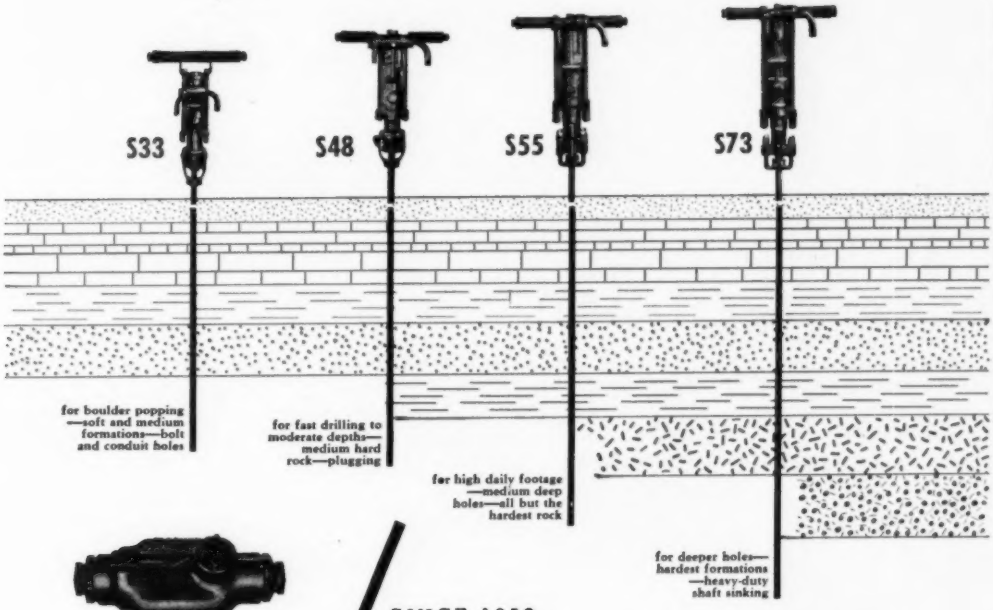
BLUE PRINTS AND OPERATING DATA ON KVS CRUSHERS AVAILABLE ON REQUEST.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

TWO PARK AVENUE, NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

any kind of rock costs less to drill with GARDNER-DENVER sinkers

No matter what kind of rock you find underfoot —there's a Gardner-Denver Sinker of the correct weight and power for lower drilling costs. Every model is designed for fast penetration—powerful rotation—clean blowing—easy holding—low air consumption. Bulletin HHD-11 gives all the facts. Send for your copy today.


S33
S48
S55
S73
for boulder popping —soft and medium formations—bolt and conduit holes
for fast drilling to moderate depths—medium hard rock—plugging
for high daily footage —medium deep holes—all but the hardest rock
for deeper holes—hardest formations —heavy-duty shaft sinking

Drills can't run dry when the LO12 Automatic Oiler guards your air lines. It stops the flow of air when it runs out of oil.

SINCE 1859

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., Toronto, Ontario

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

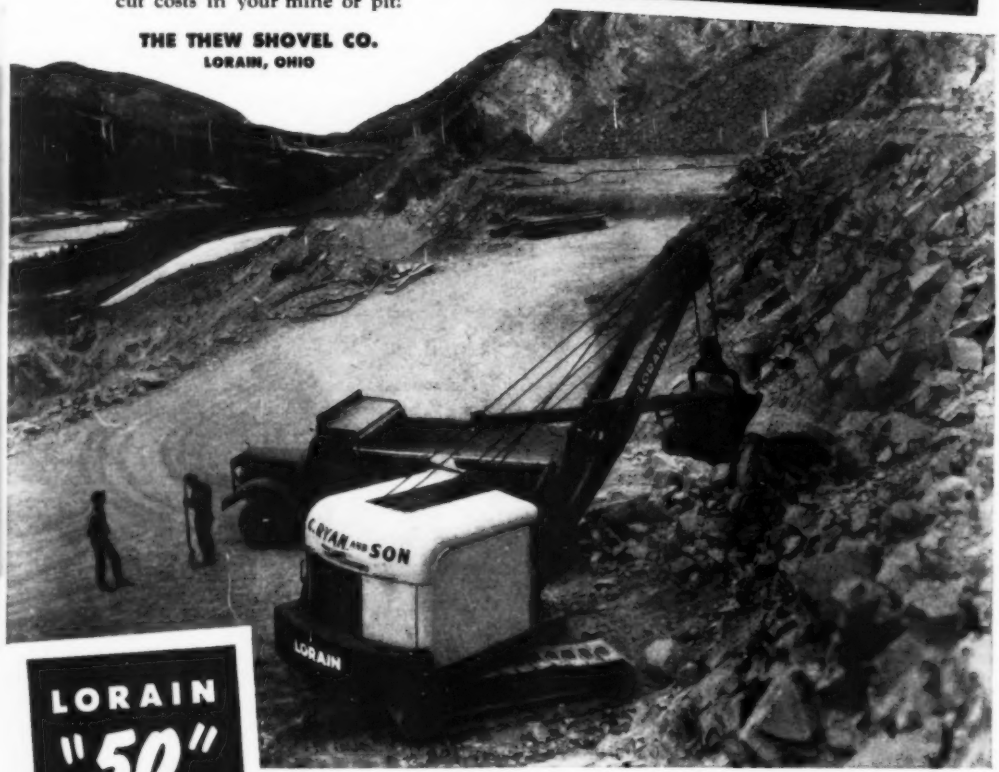
World's Largest Molybdenum Mine

is the striking setting for this new Lorain 50-1 shovel. This Climax, Colorado pit produces 90% of the world's supply of molybdenum, so vital in today's production of steels.

Tough rock digging — and lots of it — is a specialty of this 1-yard Lorain-50 because it is equipped with a shock-absorbing, hydraulic (fluid) coupling that offers many advantages for easy operation, increased production and longer life. It is the only 1-yd. shovel available with this feature as standard equipment! The Lorain-50 story is worth checking with your Thew-Lorain Distributor — to boost production and cut costs in your mine or pit!

LORAIN "50" WITH HYDRAULIC COUPLING LICKS ROUGH-TOUGH DIGGING at Climax, Colorado Pit

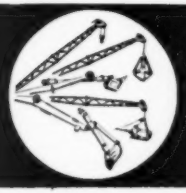
THE THEW SHOVEL CO.
LORAIN, OHIO



LORAIN "50" FEATURES

- *Hydraulic Coupling Power Take-Off* — digging power "hangs on"— cushions shocks
- *Air Controls for Steering and Tread Lock* — from operator's cab in any swing position
- *One-Piece Cast Steel Turntable Bed* — extra strength; revolves on anti-friction bearings
- *Choice of 6 Mountings* — 3 crawler lengths in 2 widths; also on rubber-tires

THEW LORAIN® on CRAWLER or RUBBER



SHOVELS
CRANES
DRAGLINES
CLAMSHELLS
HOES

on TOUGH jobs, this SUPER oil can

DOUBLE ENGINE LIFE BETWEEN OVERHAULS

KEEPS ENGINES CLEAN—NO STICKING RINGS
RETARDS WEAR—STRETCHES OUT ENGINE LIFE
LENGTHENS TIME BETWEEN OVERHAULS
LOWERS OPERATING COST
Sinclair Super Tenol
For Your TOUGH Diesel Jobs

If your engines operate at high speed, high temperatures, under shock and overloads . . . or if they operate at low engine temperature because of light loads, long idle, lots of stop-and-start—there is a lubricating oil made for you—Sinclair SUPER TENOL.

Sinclair lubrication specialists developed this lubricant expressly to *keep engines clean* and *lengthen engine life,* under all operating conditions—heavy load . . . light load . . . or idle. And they succeeded! Operators report, using SUPER TENOL, they have more than doubled engine life between overhauls.

For lubrication help, see your local Supplier of Sinclair Products or write to Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

ALLIS-CHALMERS LARGE MOTORS ... Combine Protection & Accessibility

MAINTENANCE COSTS are dealt a double blow by this new line of Allis-Chalmers squirrel-cage induction motors. First, its protective design features minimize the need for maintenance operations. Then, its planned accessibility cuts the cost of doing the maintenance work.

How Maintenance is Reduced

In these motors, protection begins with drip-proof construction. But it does not end there. Air discharge openings in the stator yoke are given the added protection of removable louvered panels. Air intakes in the rigid cast iron end shields are located so as to prevent injury to the windings by mishandled tools or other objects. Capsule-type bearing housings protect the bearings and oil supply when the windings are being cleaned. The capsules can remain sealed against abrasive dirt throughout the cleaning operation.

How Costs Are Cut

This added protection has been achieved without sacrificing accessibility. One man can perform all routine maintenance operations. To check the air gap he simply removes a few screw-type plugs from the bearing end shields.

For cleaning, he removes the upper halves of the end shields and reaches right inside the motor with his vacuum cleaner or air hose. And there is plenty of room to reach up back of the stator core through the air discharge openings in the sides of the yoke.

Wide Range of Sizes

These modern-design drip-proof (or splash-proof) cage motors are built in sizes from 60 hp at 300 rpm to 2000 hp at 1800 rpm. Ask your Allis-Chalmers representative to show you the details of this exceptional new motor, or write Allis-Chalmers, Milwaukee 1, Wisconsin, for bulletin 05B7542.

A-3409

ALLIS-CHALMERS

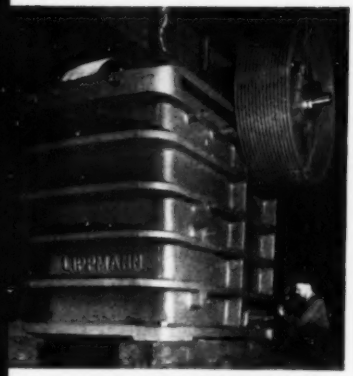
Reduces 2½ MILLION TONS

of Blast-Run Niagara Limestone to Minus 3 in. IN 18 MONTHS . . . WITH ONE CRUSHER!

Miron Brothers Fastest Growing Aggregate Producer in Canada . . .

Rock-Ravenous 36 x 48 GRIZZLY KING Jaw Crusher Often Produces 6300 Tons per Day . . . Works 20 Hours a Day, 6 Days a Week Without Shutdowns! And Jaw Dies Haven't Even Been Turned!

Actual weight chart of a typical day's production, recorded by scale under discharge conveyor, is proof that Grizzly King's output reaches 560 tons per hour.

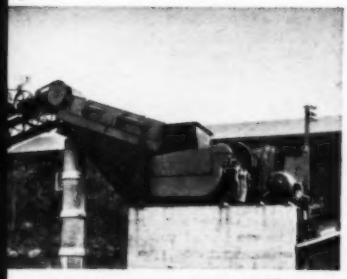


In complete Lippmann plant, Miron Bros. makes six sizes of stone — everything from ag-lime to ballast rock.

Two years ago the site of the Miron Bros. plant at Ville St. Michel, Quebec, was a farm. Today they are turning out what is believed to be more aggregate than any other Canadian producer — 300 tons per hour, 20 hours a day, 6 days a week—the amazing total of *2½ million tons in their first 18 months.*

And they're doing it with one primary in a plant that's completely Lippmann-engineered and Lippmann-built . . . . from the 36 x 48 GRIZZLY KING Jaw Crusher, the world's highest capacity overhead eccentric, through scalper, belt conveyors with Life-Sealed Ball Bearing Idlers, Screen-All Vibrating Screens with perfect-circle throw, and Roll Crushers.

They're feeding hard, blast-run Niagara Limestone up to 36 in. directly to the GRIZZLY KING, with the discharge opening set *down to 3 in.* And the crusher actually idles a good share of the time!



Other Lippmann equipment at Miron: two 48 x 24 roll crushers, five 5 x 12 Screen-All vibrating Screens, 591 ft. of belt conveyors with Life-Sealed Ball Bearing Idlers.

Amazing Capacity!

There isn't another crusher built that approaches GRIZZLY KING's capacity — extra long jaws, engineered crushing action, complete oil lubrication and alloy steel construction add up to the rock-eatingest crusher on the market today. And its low-maintenance operation is proved by the fact that Miron *hasn't even turned the jaw dies* after 2½ million tons.

You, too, can pile up extra profits with the world's lowest-cost-per-ton-crushed rock and ore machinery. And Miron is doing all this with an *investment of only $125,000* in super-capacity, low-cost Lippmann equipment.

Write today for all the facts on the complete line of Lippmann machinery for pits, mines and quarries. Follow the example of leading operators the world over who choose Lippmann above all other makes.

2003

WRITE FOR ALL THE FACTS on the complete Lippmann line for pits, mines and quarries:

Grizzly King Jaw Crushers (Bulletin 1100), Screen-All Vibrating Screens (1200), Belt Conveyors (1400), Pulverizers (1160), Life-Sealed Ball Bearing Idlers (1410), Gyra-Gnome Secondary Crushers, Circuit Rider Self-Propelled Crushing Plants, Portable Washing Plants (1650), Apron Feeders (1450).

LEW

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MILWAUKEE 14, WISCONSIN

Barber-

840 BITUMINOUS PAVING PLANT

FOR NEW CONSTRUCTION...
RESURFACING...
MAINTENANCE...

B-G 840 Paving Plant, showing use of bulkhead feed with two-gate feeder for proportioning sand and gravel. 2, 3 or 4 aggregates may be blended in this manner.

PRACTICAL . . . PROFITABLE

UP TO 40 T. P. H.

The capacity range of this B-G Paving Plant has proved to be the most practical for a broad range of users. Output is high enough to supply materials for average-sized new construction and resurfacing jobs—investment is low enough to assure profitable operation at minimum capacities, or for intermittent operation.

ALL TYPES OF MIXES

Bituminous mixes of all types are produced at lowest cost with this B-G Plant. This includes the full range—all temperatures, all gradations and all binders. For "high-type" mixes, the aggregates are blended at the feeding end. Quality and uniformity are consistently high.

TRULY PORTABLE

Each basic unit of this plant—Mixer and Dryer-Dust Collector—is mounted complete on its own trailer-type pneumatic-tired chassis. Built-in hot and cold elevators and dryer stack fold down for transport. There is a minimum of dismantling—the plant can be moved and readied for work in new locations in a few hours' time.

EASIEST TO ERECT

No special erection equipment is needed to set up a B-G Paving Plant. No excavation or footings required. Units are spotted in place by truck, adjustable jacklegs are lowered to ground level, and the plant is ready for operation once the required auxiliary equipment is in place.

LOW-COST MAINTENANCE

The B-G Model 840 Paving Plant is easy to maintain. All moving parts are quickly accessible for inspection and adjustment. B-G Distributors offer fast emergency parts service, and are staffed with factory-trained experts to help you keep your B-G Paving Plant at top operating efficiency.

AUTOMATIC PROPORTIONING

Simple to understand and to operate, the B-G Paving Plant eliminates the human element in producing a consistently uniform mix. Once the bitumen and aggregate proportions have been set, they cannot vary as the positive displacement pump and aggregate apron feeder are positively interlocked. Proportioning is continuous, automatic and accurate.

see your B-G distributor

Greene

PROVED . . . ALL OVER THE WORLD

All over the world there are primary and secondary roads, boulevards, streets, airports, parking areas, recreational and training areas, rail heads and docks paved with all classes of material mixed in this B-G Paving Plant.

Its economy has been proved by hundreds of cost-conscious contractors, cities, counties and states.

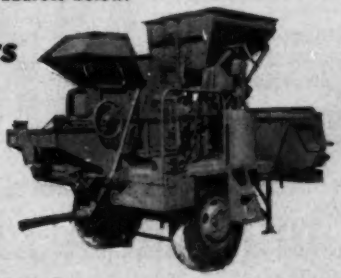
Its portability, ease of erection and uniform high quality production are factors favored by all operators—including the United States Armed Forces.

There is a need for bituminous surfacing materials in your area, and the B-G Paving Plant might well be the answer. See your B-G Distributor or write to the address below.

TWO BASIC VERSATILE PORTABLE UNITS

THE 840 MIXER

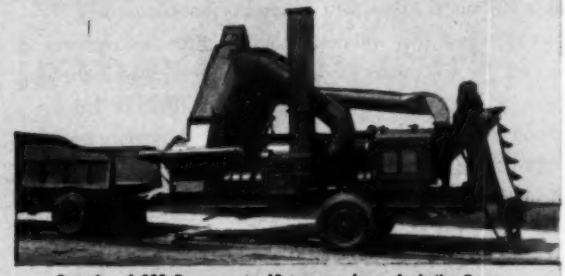
Compact, portable (note truck-towing hitch), this mixer incorporates an aggregate hopper with apron feeder and calibrated gate for accurate, measured control of flow of aggregates to pugmill. Pugmill is twinshaft type. Bitumen is supplied from insulated tank by positive displacement asphalt metering pump. Pump and apron feeder are positively interlocked for unvarying proportioning. Tank is heated by a torch-type distillate burner, eliminating need for boiler. Inclined belt conveyor elevates mixed material to trucks. All components, including power unit, mounted on pneumatic-tired chassis, equipped with jackleg for quick erection.



Capacity of 840 Mixer: up to 40 tons per hour when used with Model 839 Dryer; up to 40 tons per hour when used alone to produce cold-mix materials.

THE 839 DRYER

Equally compact and portable design is evident in this unit which incorporates drying drum, hot and cold aggregate elevators, low pressure air atomizing burner, fuel pump, blower, exhaust fan and stack as well as power unit. Twin cyclone dust collector also may be mounted on same chassis. None of these components need be removed or dismantled for travel.



Capacity of 839 Dryer: up to 40 tons per hour. A similar Dryer with smaller capacity (10 to 25 tons per hour) is available. Either may be used with the 840 Mixer.

B-G BITUMINOUS PLANTS AND ACCESSORIES

The Barber-Greene line of bituminous mixing plants includes complete equipment for mixing up to 150 tons per hour of all classes of mixes. Units and accessories may be purchased individually for operation with other than B-G equipment.

In the complete B-G line, you will find the combination of Hoppers, Apron Feeders, Portable Conveyors, Elevators, transfer pumps, storage tanks, piping and other accessory equipment required for your particular plant setup. Ask your factory-trained B-G representative for full authoritative information.

213-1

• • • OR WRITE BARBER-GREENE COMPANY, AURORA, ILLINOIS, U. S. A.

Have you ever seen a flying 'dust' man?

...You will when a Buell Engineer shows you how to reclaim the values in escaping dust and attain top over-all efficiency

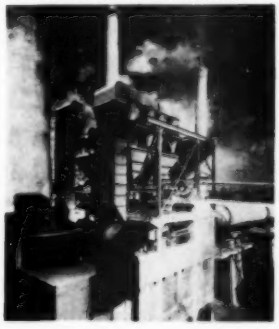
When we're called upon to boost efficiency and halt profit losses due to escaping dusts, Buell engineers plan with precision, yet move with surprising speed.

Quickly, they can pin-point a costly escape-dust problem... compute the actual loss in dollars as well as in efficiency... then, with a sureness that comes only by experience, they will design and build the dust recovery system that will most efficiently and economically do the job.

Here's why: Buell engineers—a highly skilled group of industrial "dust" men—are backed by more than 200 man-years of experience in the science of dust recovery. As a result, industry looks to Buell for leadership in methods and equipment that mean more recovered dust at less cost—for you!

For full information write today. Ask for the new, informative 'Dust Recovery' bulletin. Buell Engineering Company, Dept. 18-K, 70 Pine Street, New York 5, N. Y.

Buell van Tongeren Cyclones 'top' them all in economical kiln dust collection.



ELECTRIC CYCLONIC

HIGH-EFFICIENCY CYCLONES • ELECTRIC PRECIPITATORS
TYPE 'LR' COLLECTORS • LOW DRAFT LOSS COLLECTORS
SPECIAL PURPOSE COLLECTORS • DUST HOPPER VALVES

buell

ENGINEERED EFFICIENCY IN DUST RECOVERY

This 144-page book shows over 5,500 on-the-job truck running cost reports . . . from owners in every state in the U.S.A.

Here's *another* Ford first! New "Final Results" record, based on over 5,500 running cost reports, lets you check what truck running costs can be in over 195 different jobs!

50 million mile Economy Run shows HOW LITTLE IT COSTS to run a FORD TRUCK in your kind of work!

● The purpose of the Economy Run was to give businessmen and truck operators dependable truck running cost figures, based on actual trucks working on actual jobs. These figures are published so that you can:

SEE before you buy, just how little it *does* cost to run Ford Trucks.

SEE what size trucks cost the least to run in various kinds of work.

SEE how your running costs compare with others in your kind of work.

Are all running cost figures included? Yes! The "Final Results" book shows all gas, oil, maintenance and repair costs reported by users of 1948, 1949 and 1950 model Ford Trucks.

Can this book help YOU? Yes! It is a service to businessmen which may save you real money. It gives you a standard of comparison on one of the big expense items in your business.

What does the book show? The Economy Run book shows that in your kind of business, even the biggest Ford Trucks haul for only a few pennies a mile, and that *all Ford Trucks cost downright little to run.* See the book at your Ford Dealer's today!

ROY GEETING,
Construction Man,
Eaton, Ohio, says:

"My Ford hauls over 6 tons of gravel—runs for only 3 1/10¢ a mile!"

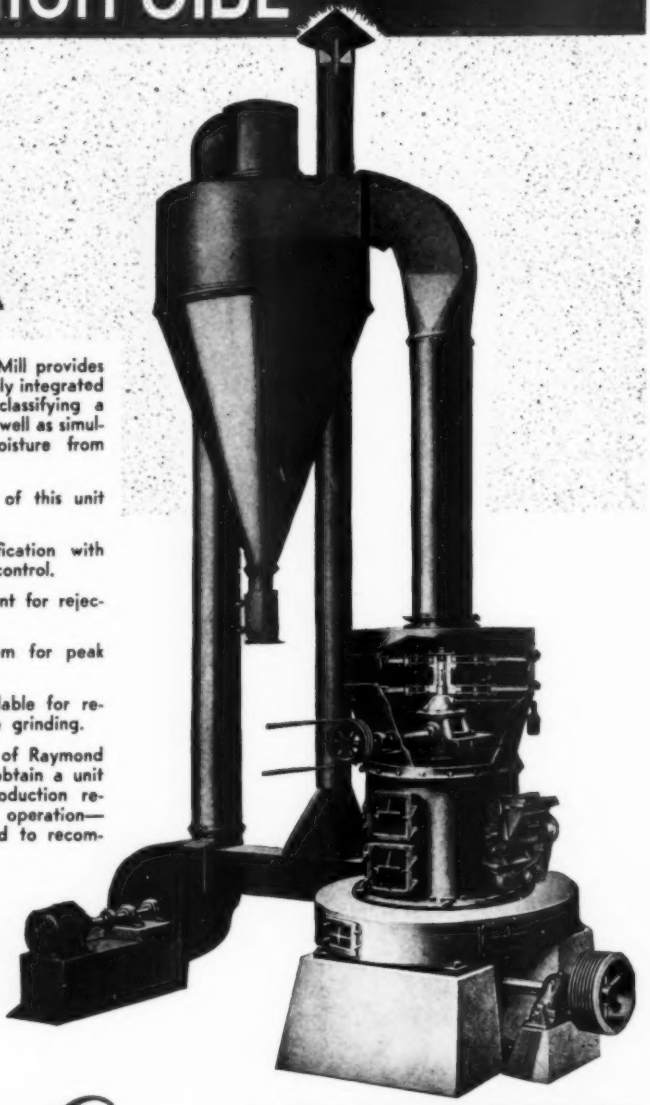
Mr. Geeting was one of over 250 Heavy Construction Men, shown on pages 43 to 46, who took part in the Run. His Ford F-6 Dump traveled 21,003 miles at a cost of $639.83 for gas, oil, maintenance and repairs. Check *your* truck running costs with those of other heavy construction men whose loads and working conditions are similar to yours!

For the right truck for your job . . .

See your Ford Dealer today!

See "Ford Festival" starring James Melton on NBC-TV.

RAYMOND HIGH SIDE ROLLER MILL



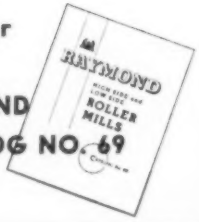
The Raymond High Side Roller Mill provides an automatic, dust-free, completely integrated system for fine grinding and classifying a great variety of non-metallics, as well as simultaneously removing surface moisture from materials being ground.

Some of the modern features of this unit include:—

- Unusually wide range classification with easy adjustment for fineness control.
- Automatic throwout attachment for rejection of impurities.
- Pneumatic feed control system for peak grinding efficiency.
- Flash Drying accessories available for removing surface moisture while grinding.

With the many sizes and types of Raymond Roller Mills available, you can obtain a unit tailored for your particular production requirement. Tell us about your operation—Raymond engineers will be glad to recommend the proper equipment.

Write for NEW RAYMOND CATALOG NO. 69

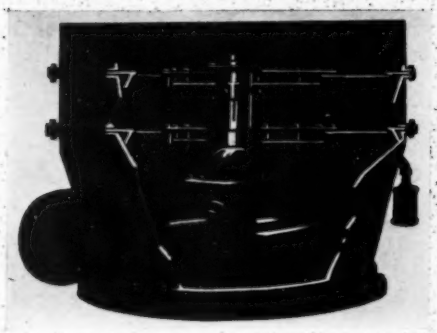


COMBUSTION

Raymond

PULVERIZER DIVISION

built to Modern Production Standards



Whizzer SEPARATION

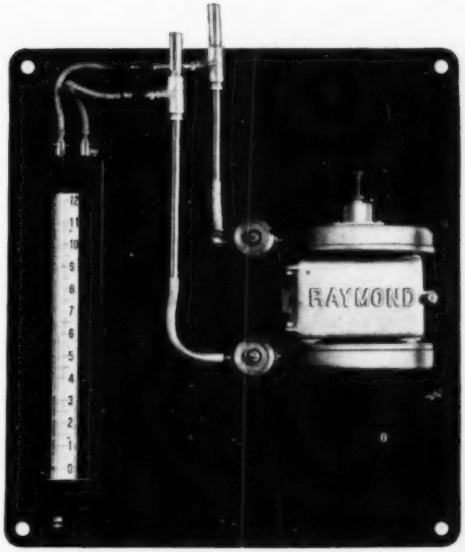
The Whizzer Separator built as an integral unit of the High Side Roller Mill combines all the desirable features required of a modern classifier including reserve separating capacity, unusually wide range of available fineness, simple fineness adjustment, and exceptionally high product uniformity.

Whizzer Separators are available in two types. The Single Whizzer unit is designed for classification in the ranges all passing 20 mesh to about 95% passing 200 mesh. The Double Whizzer Separator, illustrated, is recommended where products up in the range of 99% or better passing 325 mesh are required.

Pneumatic FEED CONTROL

This modern feed control panel board is the "heart" of the Raymond Roller Mill operation. It takes over the responsibility of maintaining the mill at peak capacity, and provides the mill with just the right amount of feed for all conditions.

The complete panel board is now furnished as standard equipment with all Raymond Roller Mills. The control unit is actuated by pressure changes in the air system of the mill, and controls the rate of feed according to the exact load on the mill.



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Sales Offices in Principal Cities

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•

CHICAGO BUSINESS OFFICE
431 S. Dearborn Street
Chicago 5, Illinois
Telephone HArrison 7-8558

GEORGE P. GRANT
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•

NEW YORK OFFICE
Room 906, 370 Lexington Avenue
New York 17, New York
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PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

PIT AND QUARRY

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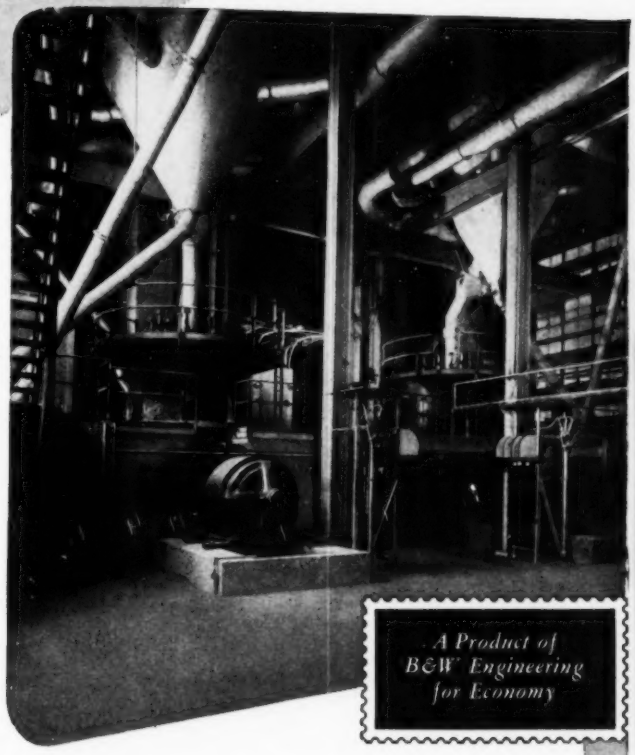
To subscribers: Date on lower right-hand corner of wrapper indicates issue with which your subscription expires. When requesting change of address, kindly send old as well as new address.

CHECK the COST-SAVING features of the

B&W CLOSED-CIRCUIT SYSTEM



A Product of B&W Engineering for Economy

- Limestone, shale and other raw materials are ground *and* dried automatically and simultaneously *within* the B&W Closed-Circuit System. No separate drying equipment is needed.
- Low fuel costs. With the B&W System, fuel consumption for heating drying-air is much less than with conventional methods. When oil is used, for example, consumption may be as little as 0.3 gal per ton.
- A thoroughly mixed product is assured through substantial circulating load.
- The B&W Pulverizer—heart of the B&W Closed-Circuit System—is available in sizes suitable to all capacity requirements.
- Call in a B&W engineer and find out more about this modern cost-saving system.

BABCOCK & WILCOX

C-198

editorial

Percentage Depletion Granted

PRESIDENT TRUMAN on October 20, 1951, signed the Tax Bill or Revenue Act of 1951 (H.R. 4473) which included, as one of its provisions, percentage depletion allowances for a number of nonmetallic minerals industries. These allowances are applicable to taxable years beginning after December 31, 1950. The Administration had been given an unexpected setback when a coalition of Republicans and Democrats in the House of Representatives rejected a compromise bill. A joint committee of the two houses made slight modifications, and the bill was then passed by the House. These changes did not in any way affect the provisions dealing with percentage depletion.

The new law provides 5 percent percentage depletion for sand, gravel, slate, stone (including pumice and scoria), brick and tile clay, shale, oyster shell, clam shell, granite, marble, sodium chloride, and (if from brine wells) calcium chloride, magnesium chloride, and bromine; 10 percent for perlite, wollastonite, magnesite, dolomite, brucite, calcium and magnesium carbonates, asbestos, and coal (increased from 5 percent); and 15 percent for borax, fuller's earth, tripoli, refractory and fire clay, quartzite, diatomaceous earth, metallurgical and chemical grade limestones, aplite, and garnet.

Up to the present there has been no precise definition of the terms "dolomite", "calcium carbonates", and "magnesium carbonates", and it is assumed that these will be interpreted by the Bureau of Internal Revenue.

PERCENTAGE depletion had previously been granted to sulphur, fluorspar, ball, sagger and china clays, rock asphalt, flake graphite, vermiculite, beryl, feldspar, mica, talc (including pyrophyllite), lepidolite, spodumene, barite, thenardite, potash, bauxite, phosphate rock, bentonite, and gilsonite. The oil and gas industries were the first to get percentage depletion in 1926, and they have the highest rate of 27½ percent. The first nonmetal to be so favored was sulphur in 1932, and it enjoys the highest rate, 23 percent, in this field. All other nonmetallic minerals included prior to the new law get 15 percent.

Briefly, as we have stated before in these pages, percentage depletion is a public policy of extending to industries with wasting assets some return to encourage the discovery and development of new deposits. It means the return to the owners, tax free, of that part of his capital investment in the mineral reserve in the ground used up by production. The allowance for percentage depletion cannot exceed 50 percent of the net income from the property, computed without allowance for depletion. If percentage depletion is granted to an industry, its members will no longer be entitled to depletion based on discovery value. They will, however, be entitled to cost depletion if cost depletion is higher than percentage depletion.

THE trade associatons of several industries benefitting from the new law have worked hard for many years to help get percentage depletion for their industries, and many producers in these and other industries have also contributed generously of their time by appearing at their own expense before congressional committees. These associations also realize the importance of providing their members with authoritative information on the application of percentage depletion provisions as soon as possible and are developing the necessary information. We hope also to be able to present such information in an early issue for those of our readers who are not members of such associations.

Agstone Associations Merged

IT IS with great pleasure that we are able to announce the merger of the Agriculture Limestone Institute and the National Agricultural Limestone Association, a development which will be of great benefit to all producers of agricultural limestone. These two bodies will be superseded, beginning January 1, 1952, by a new association, the National Agricultural Limestone Institute, Inc., with offices at 1424 K. Street, N.W., Washington 5, D. C., the present address of the N.A.L.A. N.A.L.I. is to be an entirely independent association.

This merger was consummated after a long series of discussions between the two associations during which one obstacle after another was ironed out.

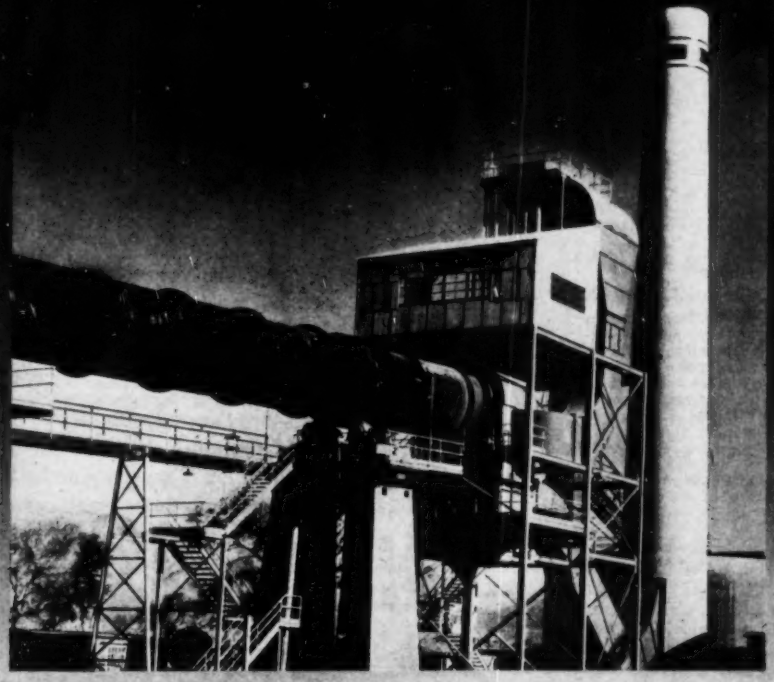
Robert M. Koch, executive secretary of N.A.L.A., will hold the same position with the new association. The N.A.L.I. will hold its first convention January 15, 16, and 17, 1952, at the Statler Hotel, Washington, D. C., at which time new officers and a 60-man board of directors, 30 from each of the dissolved associations, will take over for a term of one year. Interim officers are serving until that time, chiefly to promote the convention.

While both bodies, under able leadership, contributed materially to progress in the industry, their work was handicapped by the very fact that there were two of them representing one industry. This was a particular disadvantage in dealing with government agencies, as neither could claim to represent the entire agstone industry. The new association will not be so handicapped, and it is expected that, with the combined membership and the many new members who are now expected to join, N.A.L.I. will be truly representative of the agstone industry. With all members working together and assured of competent and progressive leadership, this association is sure to improve on the good work of its two predecessors. All agtone producers who are not now members are urged to join in order to participate more fully in the benefits to be derived from the important work being done and to help in that work.

Walter E. Trumpler

SMIDTH

ROTARY KILNS



Over 950 Smidth Rotary Kilns have been supplied, some over 500 feet long. The total capacity corresponds to one-half the World's production of cement.

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"AT HUNGRY HORSE ONLY 6 TEXACO PRODUCTS HANDLED ALL OUR MAJOR LUBRICATION"

BUILDING HUNGRY HORSE DAM, HUNGRY HORSE, MONTANA: Equipment used included 24 Diesel-powered Euclids, each of which has logged a quarter-million miles on this assignment; 9 Caterpillar tractors; 5 Northwest shovels; 27 International Harvester trucks; 8 Reo 55-passenger buses—plus numerous Chicago Pneumatic and Gardner-Denver air compressors and Chicago Pneumatic rock drills, as well as 2 Lidgerwood Cableways and 2 Washington Cableways.

General-Shea-Morrison Company, Contractor, Hungry Horse Dam, Hungry Horse, Montana, says—

"The time and confusion saved by the Texaco Simplified Lubrication Plan are incalculable."

"Not only is it more economical to use a small number of lubricants," says General-Shea-Morrison Company, "but there is little chance of error in application. The Texaco Lubricants used at Hungry Horse Dam were a big factor in keeping our equipment on the job and keeping our maintenance costs low."

Products Used in Texaco Simplified Lubrication Plan

1. ENGINE LUBRICATION: Use *Texaco Ursa Oil X★★*. Fully detergent-dispersive, keeps heavy-duty gasoline and Diesel engines clean, keeps harmful deposits from forming, guards against wear, rust, corrosion. Reduces maintenance costs and fuel consumption. **2. CHASSIS LUBRICATION:** Use *Texaco Marfak*. It's tough, longer lasting. Won't jar or squeeze out, protects against dirt, rust, wear. *More than 400 million pounds sold.* **3. WHEEL BEARING LUBRICATION:** Use *Texaco Marfak Heavy Duty*. Seals out dirt and moisture, seals itself in, assuring longer bearing life, safer braking. No seasonal change required. **4. CRAWLER TRACK LUBRICATION:** Use *Texaco Track Roll Lubricant*. Gives long-lasting protection against dirt, water, wear. Reduces maintenance costs. **5. AIR COMPRESSOR LUBRICATION:** Use recommended Texaco air compressor oils. There is one exactly suited to your operating conditions. **6. ROCK DRILL LUBRICATION:** Use *Texaco Rock Drill Lubricant EP*. "Extreme pressure" properties give superior protection against wear. Guard against rust whether drills are running or idle.

Follow the Texaco Simplified Lubrication Plan for greater savings and convenience. A Texaco Lubrication Engineer will gladly help you. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

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news of the industry

PIT AND QUARRY

Death Ends Long Career Of C. L. Best, Chairman Of Caterpillar Tractor Co.

C. L. Best, pioneer inventor and tractor builder, died on September 22, 1951, at San Francisco, Calif., at the age of 73. One of the founders of Caterpillar Tractor Company, he was chairman of the board and a member of the executive committee at the time of his death.

Mr. Best's ability to invent and to devise improvements on the early track-type tractors made these machines increasingly more useful in agriculture and in the manufacturing field. At the age of 13 he spent considerable time at his father's factory, the Best Manufacturing Company. He was 18 when he was named buyer, and by the time he was 20, he was superintendent. When the elder Best later disposed of his business, Leo decided to open his own farm machinery factory and did so in 1910 at Elmhurst, Calif. He formed the C. L. Best Tractor Company and began making gasoline wheel tractors.

C. L. Best

In 1913 his company entered the field of gasoline-powered track-type tractors. A number of refinements and improvements were made. The tractors he designed in 1919 and 1920, known as the "Thirty" and the "Sixty", were so well built that some are still in operation.

Mr. Best continued as president of his firm until 1925, when it merged with the Holt Manufacturing Company to form the Caterpillar Tractor Company. At that time the Holt firm had its main plant at Stockton and the branch factory was at Peoria. Mr. Best became chairman of the board of the new organization. He has continued to contribute engineering ideas. When he built a new home about a year ago at Walnut Creek, Calif., he incorporated a room to which he referred as his "engineering department".

In the 1920's he strongly advocated the adoption of the diesel engine as track-type tractor power. Today Caterpillar uses this prime mover exclusively to power its wide range of machines. Mr. Best was the only holder of the Caterpillar 50-year pin.

Coming Events

November 14 and 15, 1951—Chicago. Annual meeting, National Slag Association. Hotel Knickerbocker.

January 15-17, 1952—Washington. Annual convention, National Agricultural Limestone Institute, Inc. Hotel Statler.

February 11, 1952 (week of)—Chicago. 22nd annual convention and exhibit, National Ready Mixed Concrete Association. The Stevens Hotel.

February 11, 1952 (week of)—Chicago. 36th annual convention and exhibit, National Sand and Gravel Association. The Stevens Hotel.

February 18-20, 1952—Chicago, 35th annual convention and exhibit, National Crushed Stone Association. The Stevens Hotel.

J. E. Montgomery Elected Pit and Quarry Head; H. W. Baumgartner Retires

H. W. Baumgartner, founder and president of PIT AND QUARRY since 1916, has retired and sold his stock to company employees.

At a meeting of the new stockholders James E. Montgomery was elected president to succeed Mr. Baumgartner. Ray L. Smith Jr., circulation manager, and W. A. Wilson, Eastern advertising manager, were elected vice-presidents. William T. Klussman was re-elected secretary and is the new treasurer.

Mr. Montgomery entered the trade paper publishing field in 1909 and has been associated with PIT AND QUARRY for 36 years. He was made advertising manager in 1932 and was elected vice-president in 1946.

Mr. Wilson has been in publishing and advertising since 1921 and has been associated with PIT AND QUARRY for 17 years. He has been Eastern advertising manager since 1939.

Mr. Smith joined the company in 1943, having been previously engaged in related work for many years.

Mr. Klussman joined the staff in 1923 and was made secretary in 1932.

Walter E. Trauffer, on the editorial staff for 23 years, was made editor in chief in 1944. William M. Avery, senior field editor, joined the staff in 1944.

Other new stockholders include C. H. Bussmann, Central advertising manager; George P. Grant, Mid-West advertising manager; Harry F. Utley, Pacific Coast editor; Frank J. Cornyn, production manager; and John R. Duble, assistant Eastern advertising manager.

Pit and Quarry Publications publishes PIT AND QUARRY, a monthly publication for the nonmetallic minerals industries, the PIT AND QUARRY HANDBOOK, and PIT AND QUARRY DIRECTORY (annals), and also CONCRETE MANUFACTURER and CONCRETE INDUSTRIES YEARBOOK for the concrete industries. The EQUIPMENT DISTRIBUTOR'S DIGEST is published for the equipment suppliers.

A feldspar flotation plant under construction at Spruce Pine, N. C., for the Carolina Mineral Company is nearing completion. This plant will have a cacompletion. It will have a capacity of 150 to 200 tons of alaskite a day.

"Business as Usual" At Lehigh's Iola Plant Three Weeks After Flood

Those who did not see the devastation caused by the flooded Neosho, Kaw and Missouri rivers last summer may have almost forgotten the newspaper accounts of several weeks ago; but residents of this area and operators of industrial plants have very vivid memories of the flood. (See PIT AND QUARRY, September, p. 69, and October, p. 64.) They are still working to rehabilitate homes and plants such as that of the Lehigh Portland Cement Company's Iola, Kan., facilities.

Lehigh's September *News Conveyor* carried a page of Iola flood pictures which gave dramatic evidence of the extent of damage wrought by the swollen Neosho, which rose to 33.4 ft.—more than 18 ft. above flood stage. In a description furnished by G. W. Buss, chief clerk at Iola, it was related that volunteers from the plant personnel not only maintained watch at the plant but also aided stranded residents in reaching safe temporary quarters.

Mr. Buss stated that as soon as the waters began to recede, the reconstruction work was set in motion. Other Lehigh plants sent pumps to remove the millions of gallons of water from the quarry. Heaters were secured from Mason City to dry out motors and generators; and through all-out co-operation of personnel, friends, and neighbors Lehigh cement was again being shipped just three weeks after the water inundated motors, hardened the cement in the conveyors, and shorted the electrical system.

Tennessee Products Plans Perlite Plant in Florida

The Tennessee Products and Chemical Corporation of Nashville has acquired a 24-acre site in Jacksonville, Fla., on which it plans to erect a plant to manufacture "Tensulate" perlite. Carl McFarlen Jr., vice-president of the firm, said the company was also considering later construction of a mineral wool manufacturing plant on the site.

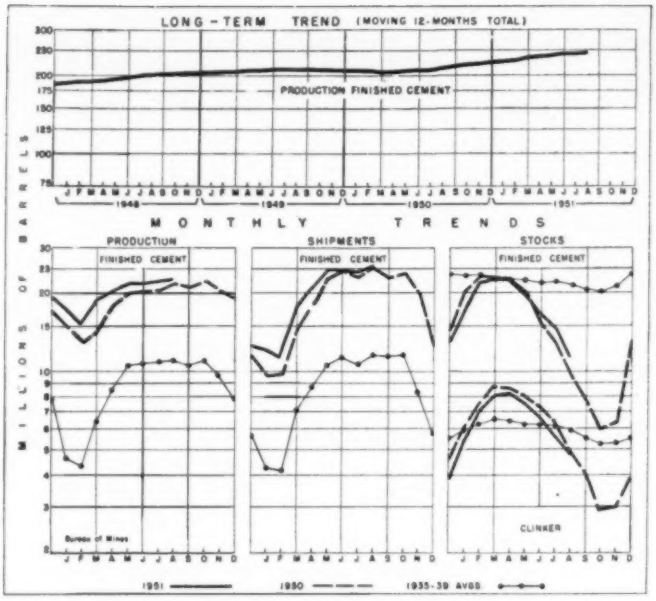
Initially the facilities will consist of two buildings with about 12,000 sq. ft. of floor space. The raw material will be shipped to Jacksonville from Nevada, New Mexico, Colorado, and Arizona.

Tennessee officials also disclosed that the firm has purchased Muehl-Lite Corporation, which operates a perlite plant at North Little Rock, Ark.

State Agstone Plant Works 15,000,000-Ton Deposit

At Macon, Miss., a new $98,000 state-owned crushing plant is expected to process 120,000 tons annually from a deposit of almost pure limestone estimated to contain 15,000,000 tons. The state is also operating a plant at Cedar Bluff.

According to the local press, farmers are supplied the agstone produced by the two plants at 90 cents per ton.



SUMMARY—The output of 22,685,000 barrels of finished portland cement in August, 1951, as reported to the U. S. Bureau of Mines, was 4 percent greater than that reported for August, 1950. Mill shipments totaled 25,852,000 barrels, representing a 3 percent increase over shipments in August, 1950, while stocks of 11,448,000 barrels were 19 percent greater than those of a year ago. August clinker production amounted to 22,009,000 barrels—a 7 percent increase over the August, 1950, figure.

PRODUCTION—151 plants located in 36 states and Puerto Rico reported a production of 22,685,000 barrels of finished portland cement during the month, as compared to 148 plants which manufactured 21,884,000 barrels in August, 1950. Clinker production of 22,009,000 barrels was 7 percent greater than that of the preceding August.

SHIPMENTS—Mill shipments of finished portland cement increased 3 percent over the total reported for August, 1950. Shipments were greater in ten districts and lower in nine, as compared to shipments in August, 1950. The percentage changes range from a 26 percent increase in the western Pennsylvania-West Virginia district to a 10 percent decrease in the Oregon-Washington district. Districts showing gains of several percents include Ohio, Iowa, and Puerto Rico.

STOCKS—Mill stocks of 11,448,000 barrels of finished portland cement were reported for August, 1951—19 percent greater than the August, 1950, figure. Clinker stocks totaling 4,795,000 barrels were 2 percent lower than at the same time last year.

First Barge in New Fleet Launched by N. Y. Trap Rock

The New York Trap Rock Corporation of New York recently launched a new barge at its River Road yards in Newburgh, N. Y. The vessel bears the name of Thomas R. Regan, a "boat gauger" for the firm since 1932.

According to company spokesmen, the launching of the vessel will mark the beginning of a large fleet of barges which will augment the firm's existing fleet. New York Trap Rock now owns 160 barges and charters 80 others. The scows will carry rock from the corporation's quarries to New York. The *Thomas R. Regan* is 115 ft. long, 36 ft. wide, and will carry about 700 cu. yd. of stone.

Penn-Dixie and Subsidiary Receive Safety Recognition

Employees of the Penn-Dixie Cement Corporation of New York were re-awarded a safety trophy at a barbecue held recently to honor their achievement. The trophy was presented by the Portland Cement Association.

Ivan F. LeGore, manager of the Accident Prevention Bureau of P.C.A., pointed out that the trophy symbolized 744 days of work without loss of time resulting from accidents.

Another achievement in safety was recognized by the U. S. Bureau of Mines in a certificate granted the Marcem Quarries Coropration of Gate City, Va., a subsidiary of Penn-Dixie.

Ben Rechtor, official of the Ralph Rogers Company, Incorporated, Bloomington, Ind., has announced that land stripping is under way in preparation for the opening of a site for a new type of stone crusher. This equipment, a completely modern unit, is being moved from one of the firm's sites at Denver, Colo. The quarry which will supply the crusher is located near Georgia, Ind.

Andrew Lundteigen, Pioneer Cement Chemist, Dies After Long Illness

Andrew Lundteigen, 89, former vice-president of the Ash Grove Lime and Portland Cement Company, Kansas City, Mo., died in that city on September 23 after a protracted illness. Mr. Lundteigen joined the firm in 1910 as managing engineer and in 1915 was elected a director. He became vice-president in 1928 and held this post until five years ago, when he retired.

A native of Norway, Mr. Lundteigen studied chemistry at the National University in Oslo, then called Christiania. He came to the United States in 1887 and took a position as an analytical chemist in Milwaukee. In 1889 he entered the cement business when he became chief chemist of a portland cement plant at Yankton, S. D.

After studying cement plants in Germany, England, and the Scandinavian countries, he returned to the United States to serve as chief chemist of the Peerless Portland Cement Company at Union City, Mich., in 1900. Two years later he was named superintendent of this firm. He developed a waterproof high-early-strength cement which was patented by Peerless.

Andrew Lundteigen Jr., a son of Mr. Lundteigen, is chemical engineer and superintendent of the Ash Grove Lime & Portland Cement Company's plant at Louisville, Neb.

N.A.L.I., Inc., Is Created By N.A.L.A.-A.L.I. Merger

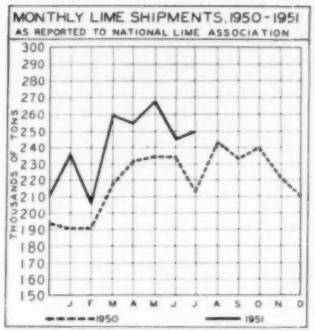
After months of discussion and negotiation a merger of the Agricultural Limestone Association and the Agricultural Limestone Institute has been announced. According to an announcement from Washington, "these efforts have now found a successful formula, and beginning January 1, 1952, the two groups will be merged and known as the National Agricultural Limestone Institute, Inc".

On January 15, 16, and 17, dates reserved by the former N. A. L. A., the first annual convention of the new National Agricultural Limestone Institute, Inc., will be held at the Statler Hotel in Washington, D. C.

Basic Refractories Plants Visited by W. German Group

Six representatives of the refractories industry in West Germany, under the auspices of the Economic Cooperation Administration, recently visited plants of Basic Refractories, Inc., at Maple Grove and Bettsville, O. Traveling under the guidance of R. A. Heindl, chief of the refractories section of the National Bureau of Standards, the group is making a 30-day trip through the Middle West and the Northeast, visiting outstanding refractories plants to observe operational techniques and procedures.

In the party are Hubert Frank, Duesseldorf-Heerdt; Dr. Kurt Giesen, Aachen; Dr. Gottfried Hendrick, Coburg; Max Kurt Laudien, Heenningen-Rhein; Walter Stephan, Bad Godesberg; and Richard Zaeske, Rommerode, Bezirk Kassel.

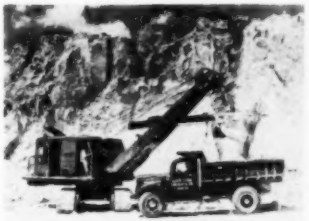


According to data collected by the National Lime Association, 46 companies in July, 1951, shipped 250,664 tons of lime (162,361 quicklime; 88,303 hydrate). Reporting companies represent 59.3 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments were approximately 465,000 tons. Shipments by uses and grades for July, 1951, were:

	Quicklime	Hydrate
Agricultural	921	9,449
Building	15,983	49,172
Chemical	145,457	29,682
Totals	162,361	88,303

The Monsanto Chemical Company, St. Louis, Mo., has formed a subsidiary in association with Nipponkasei Chemical Industries, Ltd., of Japan. The subsidiary, Monsanto-Kasei Kogyp, K. K., will operate plants at Yokkaichi and Yagova. Some of Monsanto's technical personnel will be transferred to Japan to start the new venture.

Cover Picture....



● This month our cover picture shows one of a fleet of six new trucks recently acquired by the Dixie Lime Products Company for its operation at Ocala, Fla. The shovel mines the rock after it has been drilled and blasted. In operation since 1917, this plant produces road base material for Florida's many limerock roads. Other products are hydrated and quick lime and agricultural limestone.

Government Stops Aid To Nonmetals Producers In 11 Classifications

Because it is believed that supplies of 11 minerals are adequate to meet needs for the next five years, government assistance has been shut off for the production and processing of these minerals, according to Oscar L. Chapman, Secretary of the Interior.

Among these commodities are limestone, flux stone, other limestone (used in crushed or broken form as a filler in fertilizer and asphalt, etc.), dolomite, caustic lime, hydrated lime, dead-burned dolomite, magnesite, periclase, and magnesium oxide.

Two additional minerals—potash and phosphate rock—are thought to be "probably satisfactory" for the next five years.

Interior Department spokesmen stated that no more applications for liens, tax amortization certificates, and other forms of government assistance will be accepted by the Defense Minerals Administration from producers and processors of the 11 minerals.

German Concern to Produce Blast-Furnace-Slag Cement

It has been reported that a new blast-furnace-slag cement plant of the Steine und Erde G.m.b.H. will begin production in the near future at Hanover, Germany, with an annual output of 100,000 tons.

This firm is an affiliate of the Reichswerke and has been financed with funds supplied under the employmnt program. It will use a dismantled Thomas slag granulation plant, as well as 16 reinforced concrete shelters, each with a capacity of 1,000 tons, which were initially earmarked for demolition.

Granulated blast-furnace slag, electric power, and blast-furnace gas required for the manufacture of this special cement will be available from the Reichswerke; and the two plants will be complementary.

Sixth Annual Short Course Scheduled for November 12

According to word from National Sand and Gravel Association headquarters, the sixth annual Short Course for Industry Technicians has been scheduled for the week of November 12.

After a careful study of returns in response to the association's request for comments from last year's participants in the course, it was decided that this year's program will be patterned on that of 1950.

Freeport Sulphur Company stockholders at a special meeting approved amending the firm's charter by increasing the number of shares of authorized common from 850,000 shares of $10 par value to 3,000,000 shares of $10 par value and splitting up the previously outstanding 800,000 shares of $10 par into 2,400,000 shares on a three-for-one basis.

Concrete Is Poured For $3,500,000 Kiln Plant Of Basic at Maple Grove

At Maple Grove, O., excavations for the new No. 4 kiln plant of Basic Refractories, Inc., were reported "practically completed", and the initial concrete pour, a part of the MacDonald Engineering Company's contract at Maple Grove, was accomplished on October 5. It was the foundation slab for the raw material storage silos at the feed end of the new two-kiln plant.

Cost of this major expansion program at Maple Grove will be approximately $3,500,000. Once completed, the *Basic Blast* reports, the improvements will give the corporation the distinction of having "the greatest single dolomite bulk refractory plant in the world".

Marquette Wins 7th Oscar In Annual Reports Contest

For the seventh consecutive year Marquette Cement Manufacturing Company has won honors for excellence in annual reporting. The independent board of judges in the Financial World Annual Report Survey announced its finding that Marquette's 1950 annual report is best in the cement industry. The bronze "Oscar of Industry" trophy was presented to the company at the Annual Awards Banquet in New York.

A total of 5,000 reports were considered this year in the international competition, the eleventh in the series of surveys. These reports were judged in 100 industrial classifications for the "Best of Industry" awards. In the cement industry General Portland Cement Company was runner-up for top honors.

L. A. Cement Plant Supers Get New-Type Gold Bricks

A "gold brick" like the one in the accompanying illustration, glamour-wrapped in gold foil and ribbon, recently found its way to the desk of many a cement plant superintendent in the Los Angeles area.

It was all part of an unusual sampling campaign conducted by M. M. Patterson, sales manager of Master Lubricants Company of Los Angeles. Within the glittering wrappings was a sample brick of golden "Lubriko" grease specifically compounded to lubricate machinery in cement mills and related equipment in pit-and-quarry installations.

• This gold brick was welcomed.

Hydraulic Side-Dump Trucks Serve Underground Quarry

Pictured on this page is one of the three Mack-Easton side-dump trucks recently put in service in the underground quarry of the Mississippi Lime and Material Company near Alton, Ill. This is the first reported use of units of this type underground. The Easton body is a model BD-1015H automatic drop-door hydraulic side-dump type, with a capacity of 15 tons.

Dumping is accomplished by means of three-sleeve telescopic hoists at each end. The side gate opens and closes automatically as the body is raised and lowered by the hydraulic hoists. Since the body is reversible, it may be mounted to dump either to the left or to the right; it may be changed on the job. However, the sub-frame need not be changed when the body is reversed. The cab protector plate is removed and bolted to the opposite end when the body is reversed.

• First reported use of this type of truck is at the Mississippi Lime & Material Company's plant.

Liming Totals for 1950 Show Slight Increase Over 1949 Consumption

Results of the sixth annual survey on the approximate consumption of liming materials on United States farms during 1950 which was conducted by the National Lime Association and the Agricultural Limestone Institute have been compiled. The "census" is actually the 21st consecutive annual tabulation, since the statistical study was initiated in 1929 by the National Lime Association.

The overall figures for 1950 reflect a slight increase in consumption of about 0.9 percent over 1949. During 1950 a total of 26,535,800 tons of liming materials (all classifications) were consumed. Consumption by areas was as follows:

Northeast — 2,447,400 tons, Pennsylvania again leading with 1,200,000 tons.

East Central—3,795,000 tons.

North Central—17,572,000 tons. High scores were achieved by these states: Illinois, 4,225,000 tons; Missouri, 3,440-000 tons; Iowa, 2,825,000 tons; Indiana, 2,400,000 tons; Wisconsin, 1,828,000 tons; Ohio, 1,820,000 tons.

Southern—1,845,300 tons.

Western—876,100 tons.

Grand totals for the whole country were as follows: agricultural limestone, 25,266,600 tons; burned lime, 121,500 tons; hydrated lime, 213,500 tons; marl, 469,600 tons; miscellaneous materials (mollusk and egg shells, paper and sugar mill refuse, slag, lead mine chats, water softening sludge, and carbide refuse): 464,600 tons.

"Dobbins" and "Matthews" Carry Bulk Cement for Ideal

To supply its New Orleans terminal with cement, two new barges were recently put into service by the Ideal Cement Company. The *Cris Dobbins* and the *M. O. Matthews* now are taking bulk cement from Mobile to New Orleans; later they will also travel from the Baton Rouge plant to the New Orleans terminal. "God-fathers" of the two vessels are Ideal's Executive Vice-President Dobbins and Vice-President Matthews, respectively.

Built by the Ingalls Ship Building Corporation of Birmingham, Ala., the barges are 195 ft. long, 35 ft. wide, and 11 ft. deep. Each holds approximately 7,500 bbl. of cement. Loading can be accomplished at the rate of 1,000 to 1,200 bbl. per hour. Facilities for loading were installed under the supervision of Ed Moultrie, plant engineer, John Sandbrook, engineer, and Ken Detman, construction foreman.

The cement is pumped from storage bins to an alleviator tank beside the river; from the tank it travels through a vibrating screen to a belt, which carries it to a telescopic Spirotube and into the barge.

At New Orleans the barges are unloaded by a Sauerman power drag bucket and an 8-in. Fuller-Kinyon pump. Operation of the drag bucket is controlled by a man at the front of the barge.

Ideal Cement Company Launches Deal to Buy Pacific Portland Cement

Directors of the Ideal Cement Company, Denver, Colo., have given the go-ahead to officers to start negotiations for the acquisition of Pacific Portland Cement Company, San Francisco, as a subsidiary of Ideal.

Under terms of the reorganization plan, as outlined to Ideal's directors by Cris Dobbins, executive vice-president and general manager, stockholders of Pacific Portland would exchange their stock for Ideal papers. Ideal would then assume control and operate Pacific Portland as a subsidiary company.

Pacific Portland's three cement plants are in Redwood City and San Juan Batista, Calif., and Gold Hill, Ore. The company has a rated capacity of 4,000,000 barrels of cement a year.

Ideal now operates 12 cement plants at ten points in nine Western and Southern states.

Ideal's directors also authorized a call for a special stockholders' meeting, to consider increasing the company's authorized capital stock from 1,500,000 to 2,000,000 shares. The directors voted a 50 cents-per-share dividend.

Increasing Cement Shortage Restricts Chicago Builders

Chicago is facing the most serious cement shortage in the city's history, according to Henry Crown, board chairman of Material Service Corporation, a Chicago cement distributor. The large amount of industrial construction, resulting in great part from big government contracts for military supplies, and the vast road-making and repair programs under way were given as reasons for the present cement shortage in this area.

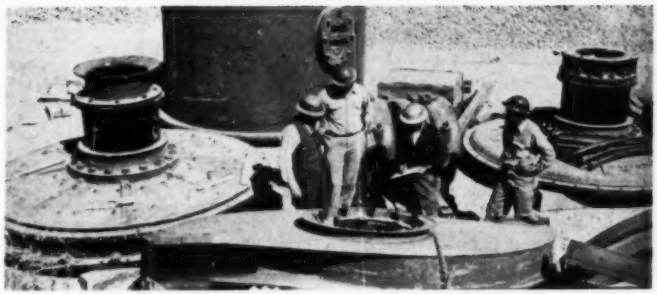
Higher building costs and a general slowing down of all construction for the remainder of 1951 will ensue, Mr. Crown predicted. He further declared that the large cement companies recently have been rationing their products to the big material firms.

New York Corporation Plans To Mine Ecuadorean Sulphur

Plans are being expedited for large-scale mining operations at the sulphur properties acquired by the Chemical Plants Corporation in Ecuador, according to an announcement released by Henry Van Kohorn, executive vice-president of the New York firm.

The company has sole rights to work the sulphur mine at Tixan, Ecuador, and a final contract was signed recently with the Ecuadorean government.

It was reported that the deposits at Tixan are situated more favorably than any others in Latin America. Unlike most volcanic workings in the Andes, which are at an altitude of 12,000 ft. or more, this mine is at an elevation of only 8,500 ft. It is situated on the Quito-Guayaquil Railroad.



• At the Calaveras Cement Company's San Andreas, Calif., plant the following were snapped during an inspection tour (left to right): A. A. Hoffman, vice-president; Grant Metzger, project engineer; John James, draftsman; and E. M. Barker, plant superintendent at San Andreas. They were conferring on the assembly of a newly-arrived Marcy 9- by 9-ft. preliminator mill. This equipment, plus a new rotary kiln, is one part of a $2,235,000 expansion program presently under way at the plant. It is estimated that the improvements will increase output by about 50 percent.

$2,235,000 Calaveras Expansion Includes 3 Mills, One Kiln

The first of three new grinding mills, a Marcy 9- by 9-ft. preliminator ball mill, has arrived at the San Andreas, Calif., plant of the Calaveras Cement Company. Footings for the firm's new fourth kiln have been installed.

It was indicated that the $2,235,000 expansion program at San Andreas is progressing according to schedule. Production of regular and specialty cements are expected to be increased by 50 percent with the completion of the project next year.

Courses in Industrial Safety Scheduled by Chicago Council

The first of a series of National Safety Council training courses in industrial safety will begin on November 12. Instructors for the five-day courses, which are to be held at the Council's Chicago offices, are members of the staff.

Opening dates for the five courses are as follows: November 12, December 10, February 11, March 10, April 21, May 19, and June 9. The advanced course will be given the week of January 14. Details may be secured by writing to the National Safety Council, 425 North Michigan Avenue, Chicago 11.

Long-Abandoned Sulphur Mine In Nevada Again Producing

After having been inoperative for nearly 25 years, the Black Rock Desert Mineral Company's sulphur mines in Sulphur, 60 miles from Winnemucca, Nev., have been revitalized.

A new mill handling 40 tons each 24 hours produces materials which are hauled to the Western Pacific Railroad for shipment. Construction is said to have been started on an additional mill.

Owners of the concern are Harold J. Adams of San Francisco and associates. Rex Zeek is general manager, and Elmer Huckaby handles hauling.

Development work was started at the mine nearly 35 years ago by A. J. Crowley and associates. The operation represented an investmen of about $650,000, and the deposit at that time was considered the second-largest in the country. Initially the mill production was 30 tons daily, with 99½ percent recovery. An explosion about 25 years ago caused the plant to be shut down, and subsequently rising costs of mining forced the operators out of business.

Dominican Cement Concern Doubles Output with New Kiln

According to *Dominican Republic*, a bulletin of the Dominican Embassy, a new $500,000 kiln installed last March by Fabrica Dominicana de Cemento, por A. at Ciudad Trujillo has doubled the plant's capacity to 12,000 bags per day, enough to supply the needs of the country.

It was stated that despite considerable increases in the cost of materials, the plant will maintain the current prices. Among the recent improvements and additions are a central control system and a concrete stack which serves both kilns.

The new kiln, manufactured by F. L. Smidth & Company, is 247 ft. long by 9 ft. in diameter and consumes 15,000 gal. of oil per day. It employes the "Folax" cooling system. An elaborate alarm apparatus and telephone system link the different parts of the plant.

The Burch Gravel Company of Sheridan, Ore., recently purchased a strip of land southwest of Sheridan, and are using the property for their new ready-mixed concrete plant. A few months ago Burch firm took over the Buell Lime Products Company's plant at Sheridan.

The Halliburton Oil Well Cementing Company of Odessa, Tex., has completed moving equipment and supplies to its new warehouse at Conroe, Tex., according to Frank Kempf, district superintendent.

Dodge Corp. Reports Drop in August Building But High 8-Month Total

Construction contract awards in the 37 states east of the Rockies showed slight decreases during August as compared with July this year and with August of last year, but the eight-month total for 1951 was a strong 17 percent ahead of the corresponding period in 1950.

F. W. Dodge Corporation stated that the huge construction volume piled up in the early months of this year so far, is keeping 1951 on top as a record building year.

With but four months to go until the end of 1951, the eight-month total of $11,450,750,000 is pressing closely the $14,500,000,000 total for the entire year of 1950. In August, contracts amounting to $1,262,811,000 were 8 percent less than in July, 1951, and 18 percent lower than in August, 1950. Non-residential awards in August were $475,957,000 or 11 percent below July, 1951, and 12 percent lower than in August, 1950.

Residential contracts of $567,566,000 were 4 percent higher than those for July, 1951, but 25 percent lower than for August a year ago. Public and private works and utilities at $219,288,000 were 26 percent less than in July, 1951, and 14 percent below August of last year.

Eight-month totals compared with eight months, 1950, were as follows: non-residential $5,079,135,000, up 52 percent; residential, $4,439,437,000, down 5 percent; public and private works and utilities, $1,932,178,000, an increase of 7 percent.

Two Ohio Operations Bought By Armco Steel Corporation

Armco Steel Corporation, Middletown, O., has purchased all outstanding stock of the Ohio Marble Company and Piqua Stone Products, Inc., both of Piqua, O. The two latter firms operate limestone quarries at Piqua and have been for many years Armco's principal source of limestone for its Hamilton, O., blast furnaces.

It is estimated that about 25,000,000 tons of limestone are available on the Piqua properties, which consist of about 650 acres, including quarries, land, and buildings. The businesses formerly operated by the Ohio Marble Company, Piqua Quarries, Inc., and the Piqua Stone Products Company, will be operated as the Piqua Stone Products Division of Armco Steel Corp.

In addition to the limestone used by Armco, the quarries produce approximately 200,000 tons of roadstone, agricultural limestone, whiting, and putty filler per year. Under Armco ownership these products will continue to be sold to other industries.

U. S. Firm Ships Equipment For Italcementi Expansion

The most important cement plant building project in the Italian trading area since World War II is presently under way, according to Earl N. Kunkle, manager of European engineering for the Kennedy-Van Saun Manufacturing and Engineering Corporation, which is making the first shipments of parts for plants in the Free Territory of Trieste and at Catania in Sicily. The order for the machinery were received last February. Value of the complete order will exceed $3,000,000.

When installed, the equipment, plus other construction work at combined sites, will comprise more than $6,000,000 in plant expansion undertaken by Italcementi, the firm which will operate the works.

In addition to conventional equipment, the plants will have waste heat boilers and 2,500-kw. turbo-generators for power to run the facilities. Initial capacity of each plant will be 100,000 tons per year. It was stated the Trieste plant may eventually turn out as much as 300,000 tons annually.

Iowa Aglime Assn. Promotes Do-Something Safety Appeal

With a recent issue of *Ag-Lime-O-Gram*, bulletin of the Iowa Agriculture Limestone Association, Inc., an effective yellow folder (see cut) was mailed to members. It is a publication of the Iowa Safety Congress.

Inside is a letter headed "Let's *do* something about it!" (the Iowa accident "score" on the cover) from Alfred W. Kahl, chairman of the Iowa Safety Congress. Sixteen "strides toward safer living" are outlined, and a graph on another page shows how safety posters and other helps are used to save lives.

• Arresting folder on accident prevention.

Trade Assn. Executives Award High Citation To Perlite Institute

The Perlite Institute, comprising 38 processors of this volcanic glass aggregate for lightweight concrete and plaster, received the Class 1-A Grand Award of the American Trade Association Executives at the opening luncheon of the A.T.A.E. annual meeting at the Edgewater Beach Hotel in Chicago on September 17.

The award was presented to Wharton Clay, secretary-treasurer of the Perlite Institute, by Wesley Hardenbergh, president of the American Meat Institute and a past president of A.T.A.E. The Hon. Charles Sawyer, Secretary of Commerce, headed a distinguished jury which selected the award winners in the fifteenth year of this competition among the 1,300 members of the trade association group.

DPA Approves Amortization of Lawrence Expansion Cost

The Defense Production Authority has issued certificate of necessity TANC 10,240 to the Lawrence Portland Cement Company for amortizing a part of the cost of expanding its plant facilities at Thomaston, Me., exactly three months after the filing of the application in Washington. Plans call for the installation of a new, giant kiln 11 ft. in diameter by 356 ft. long, together with other auxiliary equipment.

The certificate permits the company to write off in five years 70 percent of approximately $1,000,000 of the cost of new equipment being installed at Thomaston, which is designed to increase the capacity of this mill by 50 percent, or from 1,200,000 barrels of portland cement annually to 1,800,000 barrels. The overall cost of the expansion program is estimated at something over $1,500,000.

In order to secure the certificate the Lawrence Portland Cement Company had to convince the DPA that increased production is needed to meet defense demands in the area where its product is sold. Army and Navy air bases in Maine are now taking, and will continue to take for an extended period, many thousands of barrels of cement a month. In addition, current and proposed military installations dot the entire territory served with cement from Lawrence's Thomaston mill.

It will require approximately four months to produce cement following the installation of the new facilities.

Concrete Materials and Construction Company near Moline, Kan., is currently operating its quarry 24 hours a day and is at the highest peak of production in its eight-year history. The non-stop program was adopted to carry out a big order—supplying rock for the runways of the new air base at Wichita. It is estimated that from 75 to 100 carloads of material will be shipped daily.

• What is your SQ (safety quotient)? Ideal Cement Company personnel had a whirl at this cartoon last summer.

Ideal Cement Company Runs Safety Puzzle Contest

Can you find 37 safety violations in the poster on this page? Judges of the Ideal Cement Company's safety contest, conducted last summer, say there are at least that many in the cartoon. The list will be found on page 81.

The July issue of the *Ideal Cement Mixer*, official publication of the firm, carried the cartoon. It was the work of Art Sinton, an employee at Boettcher. In the September issue of the *Mixer* the winners of the contest were announced, along with the official list of violations. This was the way it stacked up: first place, Clarence Christiansen, Boettcher plant; second, R. F. Young, Okay (Ark.) plant; third, Donald Strughold, Boettcher plant. These three contestants won safety shoes.

American Cement Corporation To Build Plant in S. Carolina

Plans for the construction of a large cement plant between Harleyville and Holly Hill, S. C., were revealed recently when the National Production Authority gave its approval to a certificate of necessity for the facilities.

Promoters of the project are officials of the American Cement Corporation of Florence, S. C., headed by David L. Anderson, president. Other officers of the company are Eugene E. Stone and C. Ray Smith, vice-presidents, and W. R. Dawson, secretary-treasurer.

It was indicated by the company that the plant will produce about a million barrels of cement a year. Cost of the facilities is expected to be $6,825,000. Since the location is only 70 miles from the Savannah River atomic energy project, the plant will probably furnish cement for construction in that area, the officers stated.

Rockwood Slag Products Co. To Process Slag, Limestone

A new corporation, Rockwood Slag Products Company, Incorporated, has announced plans for a slag and limestone aggregate processing operation at Rockwood, Tenn. The slag will come from pits of the Tennessee Products and Chemical Corp at Knoxville, Tenn.

Capital of the corporation is $150,000. Production is expected to start about mid-October, with some 30 persons employed. Materials for railroad ballast, building block, and highway and industrial construction will be produced.

John M. Lambert, owner of the Tennessee Products & Chemical Corp., is the president of the new firm, and Carl McFarlin Jr. is vice-president.

American Cyanamid Company Puts Beauty on Paying Basis

At Lakeland, Fla., an experiment in face lifting on a large scale is in progress as a tract of land scarred and gashed by phosphate mining operations undergoes a beauty treatment.

American Cyanamid Company officials decided four years ago to comply with public demand for leveling off worked-out areas in Polk County which disfigured the landscape; but they wished to reclaim the land "on an economically sound basis". Accordingly, they studied methods of reclamation and began experimenting with a 220-acre tract.

The area was leveled off to form low hills, and hairy indigo and pangola grass was planted. Pangola is excellent cattle feed, and hairy indigo holds the soil together and also makes a good fertilizer when plowed under. This year the rolling hills are a vivid green. Next year the tract is expected to be supporting a sizable cattle population.

New OPS Price Formula Issued for Establishing Agstone Ceiling Prices

A regulation under which producers and sellers of agricultural limestone in the continental United States will establish their ceiling prices by formula was issued recently by the Office of Price Stabilization. Ceiling Price Regulation 77 applies to materials sold for spraying, dusting, and soil-liming purposes, and includes ground or pulverized limestone, limestone screenings and meal, burned lime, hydrated lime, air-slaked lime, burned or ground mollusk shells, calcareous and dolomitic fertilizer filler, marl, slag and by-product liming materials.

Producers determine their ceilings on bulk sales f.o.b. plant by adding to the highest prices received from various classes of customers during the base period of January 1 to June 30, 1950, the increase in the average cost per ton of producing the material occurring between that period and the period January 1 to June 30, 1951.

Costs of labor, power, fuel, raw materials, maintenance, repair and depreciation, rentals of equipment, insurance, and taxes other than income and excess profits taxes may be included in determining costs of production. If average cost per ton decreased, the base period prices may be retained, or ceiling prices established according to the General Ceiling Price Regulation under which such materials are presently priced.

If a producer sells from stockpiles away from the plant, he may add transporting and handling costs from the plant to the bulk f.o.b. ceiling price. A producer who sells on a delivered or delivered-and-spread basis may add to his ceiling price at the plant or stockpile (1) the differentials customarily charged for delivery or delivery and spreading during the base period, and (2) the difference between his current cost and average base period cost of delivery or delivery and spreading.

Perlite of Houston, Inc. Purchases Masco Perlite

Perlite of Houston, Incorporated, has purchased the property of Masco Perlite, including the company's manufacturing plant at 502 Fauna, Houston, it was announced by George W. Black, president of the new corporation.

W. F. Smith has been appointed sales manager of the company, which will manufacture expanded perlite aggregate under the trade name of Texlite. The most important uses of this product are in the building industry, where it is used for fireproofing, light-plaster, and lightweight concrete construction.

N. American Cyanamid, Ltd. Gets Option on Ingersoll Tract

North American Cyanamid, Ltd., has secured an option to purchase 97 acres of land immediately adjacent to its present quarry at Ingersoll, Ont.

To meet production requirements created by the firm's $4,000,000 expansion program at the Niagara Falls plant and the Welland works, it was indicated that employment at the Ingersoll quarry would be increased and new machinery would be installed.

Daily production of limestone at Ingersoll, which is said to have one of the finest deposits in America, averages 1,600 tons daily.

Construction Volume Reveals General Increase Over 1950

Construction contracts for the first 36 weeks of this year, according to *Engineering News-Record*, reached a total of $18,438,600,000 showing a general increase in volume over 1950 for the same period.

Federal contracts cumulative total for the first 36 weeks of this year reached $1,794,200,000, indicating a rise of 100 percent above the 1950 report for the same period. Industrial construction had a 36-week cumulative total of $2,910,700,000, up 199 percent over the same period last year. State and municipal contracts declared a total of $2,923,600,000 for the first 36 weeks, representing a 15 percent increase over the 1950 period.

Private construction totals $5,250,000,000 for the first 36 weeks, representing an increase of 9 percent over the 1950 figures for the first 36 weeks. Public construction, with a cumulative total of $4,717,800,000, is now 37 percent over the comparable period in 1950. The cumulative highway awards total for the first 36 weeks of this year is $842,300,000, down 7 percent for the same period of 1950.

It has been reported that the Weston & Brooker Company of Columbia, S. C., is reviving the Duggan granite quarries at Granite Hill, Ga. Production was said to be 35 carloads of crushed stone per day.

National Slag Assn. Presents Safety Award to France Slag Co.

Not a single lost-time injury to an employee during a total work period of 51,275 man-hours was the commendable safety record established by the Donora, Pa., plant of the France Slag Company, Toledo, O., winners of the 1950 National Slag Association's Class B safety award. In addition to this award for plants working less than 60,000 man-hours, the company also won Class D recognition.

To celebrate the company's achievement, a presentation banquet was held on September 19, honoring the employees of the plant. The Class B trophy, supplied by PIT AND QUARRY, was presented after the dinner meeting. R. R. Foley, operating manager of the France company, presented the bronze plaque to George P. Leach, Donora plant manager, who accepted the award on behalf of the employees. An individual certificate signifying the achievement was presented to each employee.

The meeting held after the banquet was conducted by B. J. Steger, auditor and member of the general safety committee, France Slag Company. Following the presentation of the awards, W. Dan Walker Jr., chief of the Pittsburgh branch, accident prevention and health division, U. S. Bureau of Mines, gave the principal address of the evening. In keeping with the significance of the occasion, Mr. Walker spoke on safety practices and first aid. A showing of safety films also was featured.

There was an added distinction for the France Slag Company in the winning of the award, as the concern has won it two successive years.

Similar awards in these and other classes of the National Slag Association's contest will be presented at the annual meeting of the association on November 14 and 15 at the Hotel Knickerbocker in Chicago. At this time France will also receive the Class D award.

• Front row (left to right): W. B. Spencer, Pennsylvania sales manager, France Slag Co.; B. J. Steger, member of France general safety committee; R. R. Foley, general operating manager for France; G. P. Leach, Donora plant manager. Back row: E. W. Bauman, managing director of N.S.A.; Jacob Cox, American Steel and Wire Co., Cleveland, O.; W. D. Walker Jr., Accident Prevention and Health Division, U. S. Bureau of Mines; and William Shoaf, Travelers Insurance Co.

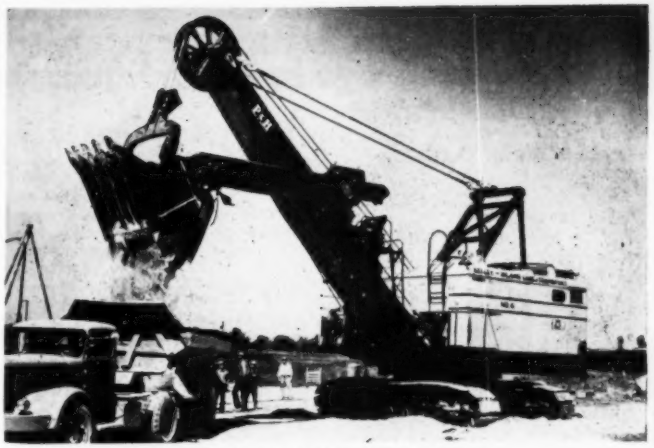
Shovel Erection Record Set at Kelley Island's Marblehead, O., Plant

A world's record of 46½ hours for the erection of a P & H 6-cu. yd., electric shovel was established recently at the Marblehead, O., plant of Kelley Island Lime and Transport Company, Cleveland, O. Four railcars were required to deliver the shovel, which is being used at the Marblehead plant to increase the production of blast furnace flux stone for the steel industry. Although the plant was operating on a 24-hr.-a-day schedule, the output was insufficient for the blast furnaces.

Personnel from the McDowell Company of Cleveland, headed by Robert C. McDowell, president of the firm, were employed to undertake the erection. The McDowell firm also sent an erection engineer and an electrical engineer to supervise operations. Arrangements were made with the New York Central Railroad to send their 150-ton wrecking crane to Marblehead to help with the heavy lifts.

The first lift was made at 12:30 p.m., on August 22, and the shovel was digging into stone at 11:00 a.m. on August 24, thereby establishing a new record for assembling this type of equipment from freight car to operation. The previous record was 52 hours. A total of 682 man-hours was required for the erection —mechanical and structural erection, 542 man-hours; electrical erection, 140 man-hours.

In addition to the outstanding erection job done by the McDowell organization, credit was given to the following persons for their co-operation in getting the shovel in operation: N. D. Shafer, superintendent of the Marblehead plant, who prepared the site and built roads and a power line; personnel from the Marblehead organization; several officials and employees of the New York Central Railroad; John Lumree and R. D. Giersch, P & H erection engineers; and Fred Niggemyer, sales manager of the McDowell Company.



• The shovel installed at Kelley Island's Marblehead plant in 46½ hours.

Total August Building Volume Reported at $2,800,000,000

Expenditures for new construction in August totaled $2,800,000,000, about the same as in July, according to preliminary estimates made jointly by the U. S. Labor Department's Bureau of Labor Statistics and the Building Materials Division, U. S. Department of Commerce. The dollar volume for new construction in August was slightly under the August, 1950, total; but when adjusted for the increase in construction costs, it represents a significantly smaller physical volume of work put in place.

A contraseasonal decline (2 percent) in private residential building and an 11-percent drop in commercial building reflect the continued effects in August of building restrictions. Compared with August a year ago, private homebuilding was down by one-third and commercial building by 6 percent. Private industrial building increased by 4 percent over July, and was double the August, 1950, dollar volume.

Expenditures for total new private construction declined fractionally from July to $1,865,000, but the decrease was more than offset by a 4-percent rise to $937,000,000 for public construction. Most of the rise in public expenditures was in atomic energy and military projects and in highway construction.

Secy. Snyder Suggests Aid For Critical Minerals Plants

Interior Secretary Oscar Chapman recently recommended immediate tax relief for the ailing Rocky Mountain mining industries, to encourage 21 defense-vital mineral expansions costing $33,470,000. He stated that of this total cost about 70 percent had been endorsed for rapid tax write-offs and expressed the expectation that within five years expansion of the mining industries should bring about a notable increase in the output of critical minerals.

Among the concerns slated for aid were the following: Continental Sulphur and Potash Company's sulphur mine at Cody, Wyo., $1,850,000; U. S. Lime Products Company's lime plant at Henderson, Nev., $190,000; and the Dow Chemical Company's plant at Freeport, Tex, $5,468,000.

Leroy Kerr, operator of a gravel plant at Yolo, Calif., recently announced the sale of his plant to Pacific Coast Aggregates, Inc., of San Francisco. Included in the transaction are trucks, pumps, loaders, tractors, conveyors, and other equipment, and 40 acres of land near Yolo.

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37 UNSAFE PRACTICES

(See page 79)

Machine Wiper
1. Wiping and cleaning moving machinery

Grinder
2. No steady rest
3. Wheel not properly guarded

Cleanup Man
4. Improper lifting position

Oiler
5. Loose clothing
6. Gauntlet gloves
7. Oiling moving machinery

Gas Tanks
8. Unsafe location
9. Loafer smoking near gasoline
10. No fire extinguisher

Painter
11. No ladder shoes
12. Unsafe position and painting too high
13. Paint spilled on floor

Air Hose
14. Leaking connection
15. Blowing air directly at face

Glaziers
16. Mushroomed tool
17. Standing on boxes
18. Hammer wrong tool for breaking glass
19. Breaking glass overhead without warning

Burner
20. Burning without goggles in place
21. Tanks not fastened against wall

Electrician
22. Live wire on floor
23. Opening switch with current on
24. Barricade for overhead work not large enough; chunks are bouncing

General
25. No safety goggles—three persons
26. Disregarding warning signs—two persons
27. Horseplay
28. Saw on floor
29. Floor generally littered
30. Lunch box not in proper place
31. Nails protruding from board
32. Heavy object leaning against wall
33. Sharp tools protruding from pockets —two persons
34. No hard hats
35. Automobile should not be parked where shown
36. Guard should be over belt on machine being oiled
37. Carrying long tool over shoulder in close quarters

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE November, 1921, issue of PIT AND QUARRY was largely for the operating man, most of the space being devoted to descriptions of various outstanding plants and to other types of operating articles. Then, as now, safety was given much attention. The feature article was inspired by the recently issued quarry accident report of the U. S. Bureau of Mines. This report showed a sharp improvement of the industry's accident rates but left much room for further improvement, and the article pointed out how this could be accomplished.

The reduction of freight rates was also given much attention. The editorial in that issue pointed out the necessity for every producer to join in the effort to bring freight rates down in proportion to dropping price levels in that period of deflation. Producers were urged to join their local, state, and national associations, which were leading in this fight. The action of the Iowa Sand and Gravel Producers' association toward this end was described in another article. A letter sent by its president, the late R. C. Fletcher, was quoted which asked for a reduction in the rate for sand and gravel equivalent to the one being considered for coal and other commodities.

The National Association of Sand and Gravel Producers, through its executive secretary, E. Guy Sutton, also appealed to the Interstate Commerce Commission for a reduction in freight rates in the Southern states, where inequities were apparently greatest. This appeal, reprinted in full, was lengthy and gave many sound reasons why such a step should be taken.

The outstanding plant article fully described and illustrated the three sand-and-gravel plants, the crushed stone plant and the dimension stone quarry operated by the Biesanz Stone Company of Winona, Minn. These were all impressive and efficient operations in their day, the stone plant having recently been improved with a reinforced concrete crushing, screening, and storage building. Charles P. Biesanz owned this company, and Charles Deering was general superintendent.

The new fuller's earth plant of the Furness Corporation at Clarksville, Pa., was also described. This firm had opened up what was said to be the largest deposit of that material yet found in this country. Detailed descriptions were given not only of the mining and processing methods and equipment but also of the uses for this product in various manufacturing industries. C. Furness Hately was president of the company.

Another interesting operation described was that of the Portage Silica Company at Portage, Wis., which had a daily capacity of 250 tons of high-grade silica sand and 25,000 sand-lime bricks, the latter cured in high-pressure kilns. This plant had been idle for seven years and was taken over and greatly improved by new owners. An adjacent core sand plant had also been acquired and improvements to it were under way. J. M. Thouvenell was president and general superintendent.

The new sand-and-gravel dredge and plant of the Hahn Company at Muscatine, Iowa, had many unusual features of design, construction, and operation. The dredge pond had been cut back from the bank of the Mississippi River. The dredge consisted of a 25- by 120-ft. barge equipped with a 12-in. Erie pump and the other necessary equipment. The material was discharged over grizzlies at the plant to a bank of vibrating screens which did all the coarse sizing. Sand and water flowed into a sump from which an 8-in. Amsco pump fed it to a settling tank over the bins. The bin structure was 126 ft. long and 85 ft. wide, and aggregates were loaded out through side gates into cars and trucks. H. E. Hahn headed this enterprising company, which is still doing business at the same location.

The new marl plant of the Summit Marl Company at Watertown, Wis., used a Sauerman slackline cableway excavator to work its underwater deposit and dried the material in a Hardinge Ruggles-Coles dryer. Most of the product was sold to farmers. E. F. Genrich was president of this company.

The Kennedy Refractory Company, Landisville, Pa., operated a unique dolomite quarry which produced a finely-broken stone without the use of a crusher. The dolomitic deposit was of such a nature that ordinary blasting and loading broke it down to the size desired for the manufacture of refractories in the company's plant at Bainbridge, Pa.

Numerous other articles gave PIT AND QUARRY readers much valuable information such subjects as anchoring a cableway in midstream; inclines for quarry pits; loading stone by contract; air compressors on shovels; rehandling stone with portable belt conveyors; advantages of roller bearings; casing drill holes; stemming holes; cleaning gravel, etc.

News items included one on the appointment of Peter C. Spence as manager of the construction department of the National Lime Association.

International Harvester Co. Opens Phoenix Proving Area

Full-scale testing of trucks has begun at the Phoenix proving ground of the International Harvester Company, after completion of an extensive road construction program.

The proving ground, comprising 6½ square miles of rugged desert land on the southern shelf of the Salt River Mountains, features a new 28-ft., 7¼ mile paved test track for trucks, believed to be the biggest paved loop of its kind.

The testing area assures International of year-around testing weather. Temperatures at the proving ground cover a 100-degree range, with 118 degrees as the recorded high. In addition to the paved test track the proving ground contains a dirt test track, access roads, a course for the "figure 8" test, and a series of steep grades—from 20 to 60 percent. An air-cleaner test and a strip for cooling, braking, and acceleration tests also are included.

$2,500,000 Reynolds Expansion Insures Future of Operation

According to a statement made recently by J. Louis Reynolds, vice-president in charge of manufacturing for the Reynolds Metals Company of Richmond, Va., the current $2,500,000 expansion of the firm's Hurricane Creek, Ark., plant will soon enable the company to import Jamaica bauxite.

Mr. Reynolds spiked rumors that when imports begin, the firm will close down mining operations in Arkansas. He declared that since the bauxite reserves in Arkansas are limited, the company will try to avoid exhausting them, and expects, by adding imported raw material, to continue its mining operations at Hurricane Creek "for 30 or 40 years". The expansion at Hurricane Creek, he added, was needed to supply additional potlines being installed at four other Reynolds plants in Arkansas.

Government Project Demands Cause Ohio Cement Shortage

Contractors in Warren, O., reported that a serious shortage of cement was holding up building construction, while suppliers declared that their mills were working at full capacity to keep up with defense construction.

Local sources state that the shortage has been caused largely by the many big jobs under way in the area, including the new $6,000,000 jet base at Vienna Airport and the U.S. government project at Wardwell, near Warren.

British Syndicate Formed To Explore Sulphur Resources

Sulphur Exploration Syndicate is a new organization formed recently in England by leading consumers of sulphur to survey elemental sulphur resources in various countries.

According to a spokesman of the syndicate, the first mission will begin work in Chile. Extensive deposits located this year in the Andes Mountains will be investigated. The find was made at 20,000 ft. above sea level in a saddle between two peaks of Mount Ollaque. It was estimated that the deposit contains about 20,000,000 tons. Later the syndicate will make surveys in other countries of South America, Central America, and the Near East.

WASHINGTON NEWS LETTER

Tax Developments

By S. HERBERT UNTERBERGER

WASHINGTON officials are sitting back and trying to figure out where the new tax law will leave the government's budget.

This much is clear, when the present session of Congress opened, the Secretary of the Treasury asked for new taxes sufficient to yield $16,000,000,000 on an annual basis. At that time it was recognized that he was probably expressing more of a hope than an expectation. Throughout the session he watched this figure dwindle—first to $10,000,000,000 and now, to less than $6,000,000,000.

The original $16,000,000,000 figure represented an estimate of the amount necessary to support our defense program on a pay-as-you-go basis. The final figure represents a Congressional repudiation of that policy. Particularly, in view of the steep price rises, an increasing proportion of the defense expenditures will have to be met by government borrowing.

Explanations

There have been many explanations for the action of Congress. The favorite explanation of the anti-Administration forces is that the revenue possibilities of the graduated income tax, particularly as applied to corporations, have been virtually exhausted.

They refer to the history of the corporation tax. In 1913, when by Constitutional amendment, the Federal Government was first permitted to levy an income tax, the rate was 1 percent. By 1929, the rate was 11 percent; by 1939 it had gone to 19 percent. During World War II and thereafter, the highest rate for the regular corporate income tax and surtax was 40 percent. The 1950 tax law raised the figure to 42 percent for 1950 and 45 percent for 1951. Since then it has been moved up necessarily to 47 percent and then to 52 percent. The current law raises rates further on all net profit above $25,000 to 50¾ percent in 1951 and 52 percent in 1952 and thereafter.

In addition, corporations are subject to an excess profits tax. During World War II this was levied at relatively high rates on profits in excess of 95 percent of average prewar profits. Now it is levied at more modest rates on profits in excess of 85 percent of so-called "normal" profits. The current tax bill reduces this percentage to 83. It also increases the ceiling on combined income and excess profits taxes from 62 to 70 percent.

The history of the individual income tax is somewhat similar. With very few exceptions, it has risen consistently since its introduction in 1913. For the most part, the current bill returns it virtually to the high level of World War II.

On the basis of this history and the record of Congress, it is then concluded that Congress has decided that taxes have gone about as high as they can go before the American system of business enterprise is destroyed. To be sure, many members of Congress have said precisely this.

The explanation would be far more convincing if this were the first time it had been offered. Unfortunately, a reading of the record reveals that it has been heard everytime a tax increase has occurred. Until now, the voices predicting that an increase in income taxes will lead to certain catastrophe have never been so loud as they were before 1913, when only a 1 percent tax was being proposed.

Of course, the practical politicians around Washington have an entirely different explanation. They point out that tax increases are never popular, either with the members of Congress who enact them or with their constituents who pay them. With the 1952 election so close by—indeed, the campaign has long since begun—the $16,000,000,000 tax request was doomed before it was ever made.

Politicians insist that all legislation, and particularly tax measures, are viewed in terms of their political consequences. Thus, here again Congress followed its time-honored principle of plucking the feathers where the "squawk" is least.

Rather than attributing the action of Congress to its concern for the economy as a whole, they believe that Congress reasoned pretty much as follows. Extraordinarily high corporation profits are due in great part to government orders for defense goods. While the corporations will not like to pay the high corporate income taxes, they will probably not protest too loudly. The amount of the tax, therefore, represents the estimate of Congress of how much the corporations will accept before protesting so loudly that the incumbents' chances of reelection are damaged.

Similar considerations also determined the ultimate size of the increase in the individual's income tax.

Curiously enough, both of the above explanations fail to indicate a careful consideration by Congress of the nation's defense needs. In that regard, both of them appear to be regrettably accurate. Throughout the very lengthy consideration and debate, it often appeared to the observer that every problem was considered except the most obvious one of which tax policy would help most to make the country strong.

Inflationary Implications

As pointed out above, the final compromise represented a decision by Congress to finance only a part of the defense effort by taxes. The remainder would have to be financed by borrowing.

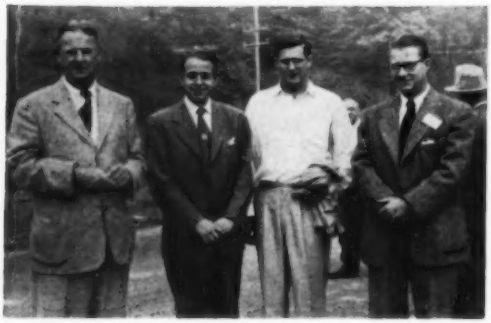
Practically everyone recognizes now that government borrowing adds to the already mounting inflationary pressure. This results from the fact that most government borrowing is not from individuals, but from banks. As a matter of fact, borrowing from individuals generally has a deflationary effect, since it transfers purchasing power from the individual to the government. On the other hand, borrowing from banks requires that banks expand their credit, thereby increasing the volume of purchasing power. In this situation, both the government and the individuals have purchasing power available. The net result is that they bid against each other for the limited supply of goods available, thereby driving the price up.

Other aspects of the current tax measure are also likely to have inflationary effects. The most important of these is the substantial increase in excise taxes on a wide variety of articles—from tennis racquets to automobiles.

(Continued on page 98)

American, Foreign Methods Presented At N. L. A. Operating Meeting

By W. E. TRAUFFER



● At the recent National Lime Association operator's meeting were Bolton L. Corson (G. & W. H. Corson, Inc., Plymouth Meeting, Pa.); Stephenson Smith (Limestone Products Co., Menominee, Mich.); Kent Jander; and Robert S. Boynton (National Lime Association).

another ON THE SPOT report

THE seventh annual operating meeting of the National Lime Association, held September 10, 11 and 12, 1951, at Heaton Hall, Stockbridge, Mass., set an all-time attendance record of 103. This total included four visitors from Germany and one from England and members from all parts of the United States and Canada. Including wives of members, the total attendance was 155. The English visitor was Dr. N. V. S. Knibbs, who had attended several previous meetings and who was on his way to Australia with Mrs. Knibbs. The program was well-planned and comprehensive, covering a wide range of subjects of interest to lime producers. Time was also allowed for visits to three plants in the area, each incorporating new and important developments in operating methods and equipment. The meeting was climaxed on Wednesday afternoon with golf and other activities at the Stockbridge Golf Club, followed by a real New England clambake, with lobster and all the trimmings. The scenic beauty of the Berkshire hills and the generally excellent weather contributed considerably to the success of the meeting.

The first day of the three-day meeting was devoted to formal papers and discussions which covered such subjects as German lime production methods and new developments, a new down-fired vertical kiln, rotary blast-hole drills, blasting, Fluo-Solids kiln and dryer, etc. A day and a half were devoted to visits to lime plants, and these trips were perhaps a more popular feature than ever before. The first plant visited was that of the New England Lime Company at Adams, Mass., which featured the large-capacity Dorr Fluo-Solids kiln and dryer in operation. Next on the schedule was New England's lime and magnesium operation at Canaan, Conn. This latter operation received most of the attention. The morning of the third day was devoted to a tour of the Lee Lime Corporation's plant at Lee, Mass., which featured the Kennedy-Van Saun rotary kiln with preheater and deheater in operation. After the plant tour a blasting demonstration was staged in the quarry by Dupont engineers.

Lime Industry in Germany The four representatives of the German Lime Industry present at this meeting were: Paul Flachsenberg of the Rheinische Kalksteinwerke, Wulfrath; Herman Lange of the Hohenlimburger Kalkwerke, Hohenlimburg, Westfalen; Kurt Muehlen, of the Ulmer Weisskalkwerke, Ulm; and Paul Ugowski of the Rheinische Westphalische Kalkwerke, Dornap. These producers attended this meeting as a part of an American tour they are making to study the practices and products of our lime industry. All of them spoke some English, but Mr. Lange, who at one time lived in this country, was the spokesman. He is president of one of the largest German lime companies and of the German Lime Assn. and is considered one of the leading authorities on lime in Germany. He gave a paper on the industry in that country which is reported in brief. Included was a description of one of the outstanding plants in that country, which was illustrated with slides.

In opening his discussion Mr. Lange expressed his appreciation to Mr. Boynton, who helped to overcome the many difficulties involved in arranging such a trip. He said that the lime industry in this country as it is today is known to most producers in Germany only through what they read in periodicals and other literature. For this reason he did not feel that he was in a position to make any comparisons between the industries in the two countries. Originally, he said, their lime industries developed along entirely different lines, with United States producers using wood, which was then so plentiful, while German producers used coal or coke. The important difference, Mr. Lange finds now, is in the level of wages paid and the cost of fuel. In Europe the cost of fuels is extremely high, a ton of coke costing twice as much as a ton of lime. Labor is comparatively cheap, as a skilled laborer earns the equivalent of the price of a ton of lime in about 13 hours. As a result every effort is made in Germany to economize on fuel; the use of mechanical labor-saving equipment is not as important as it is here.

Mr. Lange then described the operation of the Rheinische Kalksteinwerke at Wulfrath, near Duesseldorf, one of the largest and most modern lime plants in Germany. It operates what is believed to be the largest-capacity quarry in Europe, and the plant has a capacity of 290,000 short tons of limestone and 61,700 tons of burned lime monthly. The overburden is removed by shovels and cars and is being used to form a dike for a 220-acre settling pond. About 80 percent of the stone is brought down by means of coyote holes, and the balance is well drilled with a face up to 75 ft. in height. The coyote holes are driven back about 30 ft. from the face, and the lateral tunnels are about 27 ft. long. Yield is about 4.3 tons of rock per pound of dynamite. The well drill holes are detonated with split-second delays, and the yield is about 5.3 tons per pound. Some secondary shooting is required, and the loading is done by 4.3-cu. yd. shovels into cars, which are still quite generally used in Germany. There are two 230-ft. skips with tilting mechanisms which dump the materials from the cars to grizzly feeders ahead of the two 71 x 55-in.

primary jaw crushers. Their combined capacity is about 1200 t.p.h. The rock then goes to two secondary crushers and to a screening and washing plant to remove the dirt which could not be stripped. The muddy tailings have been quite a problem.

The lime plant consists of two Hoffmann kilns and 18 shaft kilns. The Hoffmann kilns are old, but there are still many of them in use as they can burn a low grade of coal mixed with lignite. The chemical industry prefers this type of lime. Each kiln has a capacity of 163 short tons daily. The shaft kilns include four new Seeger mixed feed kilns which are charged with alternate layers of coke and limestone in such a way that the coarser stone goes to the center and the fine stone to the periphery. These kilns are 13 ft. interior diameter and the shaft is 76 ft. high. Each has a capacity of 99 short tons daily, based on pure CaO, and a fuel rate of 1,962 B.t.u.'s per lb. These kilns are fed with 10 percent 2⅜- to 4-in. and 90 percent 4- to 8-in. stone. Six of the other shaft kilns have elliptical cross-sections with an area of 75 sq. ft. and height of 60 ft. and are gas fired. The output of each kiln is 77 short tons daily with a fuel rate of 2,439 B.t.u.'s per lb.

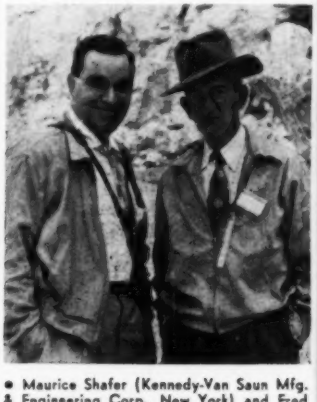
According to Mr. Lange, hydrators such as are used in the United States are unknown in Germany. In this plant the hydrating is done in mortar mixers of 0.65- and 1.3-cu. yd. capacity. The time for hydrating a charge is 11 min. Rejects are sold as agricultural lime and for the production of high-strength artificial hydraulic lime. Packing of the finished product is done by valve baggers.

In Germany, said Mr. Lange, the industrially-consumed limes and limestones are invariably sold directly to the respective industries, while building limes are distributed by wholesalers. Agricultural lime is distributed by a central sales organization which sells the product to farmers at the same price at any railroad station within the Federal German Republic. As prices received by all farmers for their products are set, this method of distribution gives them all the same break. At present farmers are spreading their own liming materials, but Mr. Lange stated that producers are interested in learning more about the American practice of having the spreading done by the lime companies or by contractors.

Blasting P. K. Alvord, assistant district manager, E. I. du Pont de Nemours & Co., Inc., New York, gave a resume of the developments and improvements in explosives and blasting methods and equipment which over the years have changed blasting from a more or less

• F. G. Schwalbe and F. M. Merritt of the Toledo Engineering Co., Inc., Toledo, O.

• W. D. Jardine and R. G. Foster of the Winnipeg Fuel & Supply Co., Ltd., Winnipeg, Canada.



• Maurice Shafer (Kennedy-Van Saun Mfg. & Engineering Corp., New York) and Fred Warner (the Warner Company).

• Carl L. Morris (Ash Grove Lime & Portland Cement Company); Reed C. Bye (the Warner Company); A. H. Nieman (Ohio Hydrate & Supply Company); and Clyde Horton (New England Lime Company).

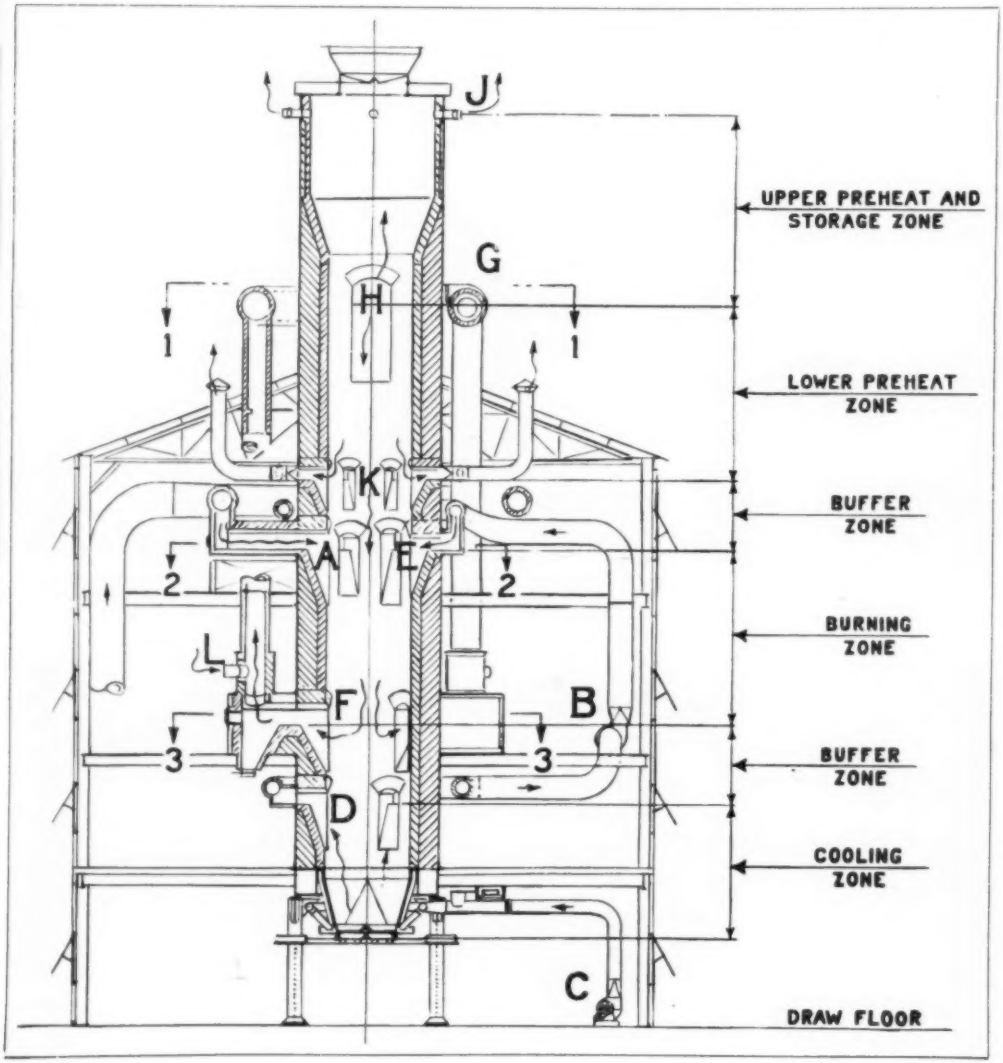
• The visitors from Germany: Paul Ugowski (Rheinische Westphalische Kalkwerke, Dornap); Kurt Muehlen (Ulmer Weisskalkwerke, Ulm); Hermann Lange (Hohenlimburger Kalkwerke, Hohenlimburg, Westfalen); P. Flachsenberg (Rheinische Kalksteinwerke, Wulfrath).

hit-or-miss operation into a science. Blasting, he said, can now be done safely and with uniformly low cost and high efficiency if current knowledge of the subject is properly applied. Blasting remains a highly important part of any quarrying operation as it is the first operating step on which all following operations are more or less dependent.

A major step forward in the history of quarry blasting was the adoption of the square drill hole pattern. The next, the speaker stated, was the development of millisecond delay blasting which is now almost universally used and which has lowered blasting costs, increased yield, reduced vibration, etc. He cautioned, however, that delay blasting must be combined with other modern procedures as best results cannot be obtained by using old layouts with their closer spacings and heavy burdens. Producers were advised to establish a safe and economical drill pattern for maximum results, and to maintain adequate records of shots, so that future changes may be made intelligently.

Mr. Alvord cautioned that dynamite is always dangerous if not properly cared for, handled, and used, but that proper supervision can insure against accidents. He described the new Dupont Primacord millisecond connector as another important step forward in safe and efficient blasting.

Vertical Kiln Down Draft In *A New Approach to Lime Making*, F. G. Schwalbe, president of the Toledo Engineering Company, Inc., Toledo, O., described the new Arnold & Weigel down-



• Fig. 1. Vertical cross-section of lime kiln described in the address of F. G. Schwalbe.

• John V. Andrews (Kelley Island Lime & Transport Co.) looking over one of the plants.

• Philip L. Corson (G. & W. H. Corson, Inc.); John M. Deely Jr. (Lee Lime Corp.); and William A. Roberson (Kelley Island Lime & Transport Co.).

draft kiln, which differs in many respects from other types of kilns now in operation. Described by the speaker as an upside down kiln, the unit is the result of this glass plant engineering firm's experimentation to provide a more efficient method of burning lime. This kiln has not yet gone beyond the laboratory stage, but it seems to have very definite possibilities and should provide much food for thought for operators.

In a glass-making furnace, said Mr. Schwalbe, the radiation and convection losses occurring in the burning zone form 50 to 60 percent of the total fuel requirements, whereas in a vertical lime kiln they form only 2 to 3 percent. An increase in the production of a lime kiln can therefore effect only a small percentage of reduction in the fuel required per unit of output. Any new kiln design, he said, can as a result offer only limited heat-saving possibilities. It should, instead, permit the fuel to be burned in an efficient manner but should provide uniform burning and flexibility. This combination, he said, can be obtained only by following the principles applying to glass melting furnaces, open-hearth furnaces, and other types of processing furnaces. It is necessary that:

1. Gases being heated shall travel upward through the heating medium.
2. Gases giving up heat or cooling shall travel downward through the cooling medium.

The conventional type of vertical lime kiln, said Mr. Schwalbe, utilizes these principles only in one respect: the cooling air entering the base of the kiln is heated as it passes upward through the burned lime. The Arnold & Weigel kiln incorporates both principles.

Mr. Schwalbe illustrated his talk with slides which showed the principles discussed, the design and construction of the kiln, the various controls, and basic data on its expected performance. Figure 1 is a vertical cross section of the kiln. Fan "C" delivers to the bottom of the cooling zone air 40 percent in excess of that required for combustion; and the preheated combustion air, plus 8 percent excess, is drawn from the top of the cooler through ports "D". The balance of the air flows on upward to the burning zone exhaust ports "F". This forms a gaseous burning zone gases from passing seal which prevents the CO_2 in the through the cooling lime and subjecting it to re-carbonization. It is calculated that this upward-flowing air will uniformly cool the lime to 250 deg. F.

The gas fuel is introduced to the kiln through ports "A". The preheated combustion air from the cooling zone is introduced by fan "B" back into the kiln through port "E". At this point near-atmospheric pressure is maintained and as the gas and air mix in the burning zone, combustion takes place and the products of combustion are made to flow downward. With the CO_2 from the stone and the excess air from the cooler they are withdrawn through ports "F" by fans "C". As the temperature of these mixed gases is too high for handling by a fan, blending air is introduced to maintain a temperature of about 1,400 deg. F. The burning zone fans "G" then return the mixture to the kiln through ports "H". About 23 percent of these gases move upward and maintain a positive pressure in the upper preheating zone. Adjustable vents "J" are provided to permit the cooled gases and moisture from the stone to discharge from the kiln at about 300 deg. F. The balance of these gases flow downward to effect uniform preheat of the stone, and these leave the lower preheat zone through vents "K" at about 1,200 deg. F.

Between the vents "K" and the fuel and combustion air ports "A" and "E" is a buffer zone of preheated stone. The pressure condition created forms a gaseous seal which prevents fuel gas and combustion air from traveling upward.

The above is, of course, a very rough condensation of the operation and control information presented by

Mr. Schwalbe. His paper created a great deal of discussion which brought out additional interesting information. It was apparent that the design of this kiln was the result of long and careful study and that no important factors in its operation had been overlooked. It was pointed out that this kiln can burn different sizes of stone and operate at different capacities without affecting its heat balance. The theoretical lime-coal ratio is 4.32 to 1, and the heat required per lb. of lime is 2748 B.t.u.'s.

Rotary Blast Hole Drills L. E. Smith, assistant manager of operations for the Kelley Island Lime & Transport Company, Cleveland, O., described the development of the Joy rotary blasthole drill and his company's experience with it. Rotary drills, he said, originated in the oil fields, and the original Joy model designed for the stone industries made its appearance five years ago. The original models worked well in limestone formations, and later models were successfully drilling harder formations. He also described the Tri-Cone bit which is being used with bit pressures up to 30,000 lb. p.s.i. The latest Heavyweight Champion model, said Mr. Smith, includes many improvements.

Mr. Smith described a number of installations of this drill and the results being obtained, including the one at the Thornton, Ill., quarry of the Material Service Corporation, which has been described in Pit & Quarry. The two drills operated by Kelley Island, he said, drilled at rates of from 55.5 to 141.43 ft. per hr. in different types of stone, and the total cost of operation over a period of five months was 23.23 cents per foot of hole. This compared with well drills in the same formations which averaged 8.5 ft. per hr. at a cost of 42 cents per foot. According to Mr. Smith, the

drill bits never stick, and straight smooth holes are obtained in all formations. About 4 or 5 bits are used up every month.

General Discussion of Lime Burning No operating meeting would be complete without an open forum at which anyone could bring up any questions he desired. At these meetings it has been found advisable to prepare an advance list of questions submitted by members, so that the limited amount of time available could be devoted to the subjects of interest to the greatest number. This meeting was presided over by John V. Andrews, manager of operations for The Kelley Island Lime & Transport Company. The subject of preventing or removing clinker rings in rotary kilns comes up at each meeting. One operator said that in his plant clinker rings are removed in two days merely by reducing the size of stone fed to the kiln. Another said that rescreening of the stone ahead of the kilns to remove fines slowed the formation of rings. Several others agreed that the use of integral coolers attached to the kiln shell helped to alleviate this condition. Changing from gas to coal firing and then back again did the job for one producer, making the scale fall out in layers.

The effect of the direction of the flame on the formation of kiln rings has been given increasing attention at these meetings. One operator who had rings forming every ten days now screens the stone ahead of the kiln and impinges the flame on the lining. Rings are now forming at much less frequent intervals. An operator who uses gas and oil to fire a roasted dolomite kiln told of rings which require as many as 5,000 shells from a kiln gun daily.

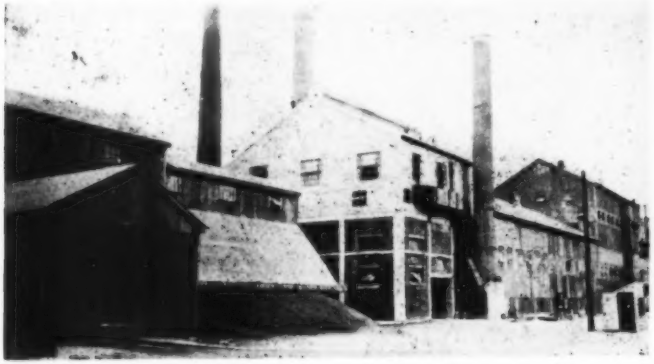
Also discussed were the location of dams in rotary kilns and their effect. One operator uses a 16- or 18-in. dam at the discharge end of a kiln. This creates a pool which comes over the dam at a temperature of 2,000 deg. F. or less. The only trouble is that such a dam makes it difficult to empty a kiln. A dam 60 ft. from the discharge end of the kiln had also been tried, but it clinkered up and also caused turbulence of the gases.

Fluo-Solids Kiln and Dryer Frank S. White, assistant to the president, New England Lime Company, Adams, Mass., gave a brief description of the Dorr Fluo-Solids kiln and dryer operated by that company at its Adams plant. Much of this information had been presented at previous meetings and in PIT AND QUARRY, but he also gave details on the latest improvements in the design of the kiln and of the new sizer-dryer. This information, preceding as it did the inspection tour of the Adams plant on the following day, gave the producers a refresher course which made it easier for them to interpret what they saw at the plant. Mr. White used a small operating model of the kiln to illustrate the points brought out in his discussion.

The new Fluo-Solids kiln, Mr. White stated, is 13½ ft. in diameter by 45 ft. high; it has five chambers instead of the three in the orig-

• Above: The plant of the Lee Lime Corp. at Lee, Mass., which was on the list of plant tours. Only the preheater (left) at the feed end and the bins at the discharge end of the rotary kiln are visible in this view.

• Below: Lime and magnesium operation of the New England Lime Company at Canaan, Conn., second stop of the plant tour. The magnesium operation received the greatest share of attention from the visitors.



• The Fluo-Solids kiln at the plant of the New England Lime Company, Adams, Mass., which was one of the features of the plant inspection tours.

• In this group, waiting for the blast at the Lee Lime Corp. quarry, are (left to right): Wallace E. Wing (Marblehead Lime Co.); L. John Minnick (G. & W. H. Corson, Inc.); Robert S. Boynton (National Lime Assn.); John V. Andrews (Kelley Island Lime & Transport Co.); and John M. Deely (Lee Lime Corp.).

inal smaller pilot installation. The first three chambers are used to preheat the stone to 925, 1,370, and 1,560 deg. F., respectively. The calcining zone temperature is about 1,860 deg. F. and that in the cooling zone is about 675 deg. F. Minus 4-mesh stone is being fed to this kiln, but the true bed material is 10- to 100-mesh. Either fast- or slow-slaking lime can be made by a slight change up or down from the 1,860-deg. calcining temperature, and control must be accurate at all times as only a few degrees change in temperature results in a sharp change in slaking time. Temperature is automatically controlled, and adjustments are made by increasing or decreasing the feed to the kiln.

The kiln is now producing 90 to 94 tons of lime daily, according to Mr. White, with an 80 percent recovery; dust loss is about 20 percent. After the new sizer is in full operation, it is expected that the dust loss will be reduced to 12 percent or less. Fuel consumption is averaging 32.7 gal. of Bunker C oil per ton of lime produced and recovered or 4,900,000 B.t.u.'s per gross ton and 4,600,000 B.t.u.'s per net ton.

Mr. White stated that it takes a crew of six men about eight hours to start up the kiln after it has been down for a considerable period, but that there is little loss of material in the process. Methods have also been developed which make possible interruptions to production of one or even two hours without undue trouble. Regular insulating brick lining is used throughout, and a life of 10 years or more is expected.

The new dryer-sizer, known as the Dorrco FluoDry system, had just been started up, so little operating data was available. It is rated at 150 t.p.h. and is essentially a single-stage Fluo-Solids unit 9 ft. in diameter by 20 ft. high. It operates on Bunker C fuel oil, and 90 percent excess air is used. A fuel consumption of about ½ gal. per ton is expected.

Ferrosilicon Magnesium Plant

The second stop was at the New England Lime Company at Canaan, Conn. This consists of a combination dolomitic lime and ferrosilicon magnesium plant. Everyone was much interested in the process. This plant was completely described in the March, 1944, issue of PIT AND QUARRY shortly after it went into operation. Briefly, the operation is as follows.

The stone here is a high-grade dolomite which is low in sodium and potassium. It is passed through a primary crusher and hauled in trucks to the magnesium plant, where it is further reduced and screened. From storage the stone is fed into two Vulcan rotary kilns, one 7 by 120 ft. and the other 6 by 100 ft. Both are coal fired by individual Raymond direct-firing bowl mills. These kilns discharge into Vulcan 4-

• David Follett and W. J. Barrett (New England Lime Company).

• W. T. Eickelberg and P. K. Alvord (E. I. du Pont de Nemours & Co., Inc.) looking over the results of the demonstration blast.

by 40-ft. and 4- by 28-ft. rotary coolers, respectively. There are waste-heat boilers which can be used if desired for heating and in the magnesium-manufacturing process. Some of the lime is further reduced for process use by two Raymond 5-roll high-side mills which are equipped with double whizzers and are connected to cyclones and Dracco bag-type dust collectors.

The conventioneers were very much interested in the magnesium-manufacturing operations, which use the Pidgeon process. The lime and crushed ferro-silicon are batched, then passed through Muller-type mixers and to a Hardinge rod mill before going to the briquetting machines. The briquettes are loaded into bags for direct loading into the furnaces. There are 20 furnaces with 20 retorts each, and every retort is operated under very high heat and high vacuum, magnesium vapor being distilled off in the hot section and condensed in a cooler section of the retort which is outside the furnace wall. At the end of the cycle, which may be from 8 to 13 hours, the retort is opened and the magnesium metal is removed in a sleeve which had been previously placed in the condensing section. The magnesium metal, in the form of crowns or muffs, is then sent to the melting and alloying department to be melted down into ingots or billets. During the melting operation alloy ingredients can be added to produce the various commercial alloy ingots.

(*Continued on page* 94)

American Nepheline's Output Upped

another ON THE SPOT report

Nepheline syenite processing site in remote for final processing and

NEPHELINE syenite was first introduced to the ceramic industry on this continent in 1935 when American Nepheline Limited opened a multi-million ton deposit at Blue Mountain, now Nephton, north of Lakefield, Ontario, where a 40-ton-per-day mill had been built. This mill supplied Canadian needs, but shipments into the larger United States market were hampered by the high duty on the finished product. In 1936, therefore, the original independent company merged with Ventures Limited, a large international mine holding company dealing in nickel, gold, silver, copper, magnesium, etc. A new mill was built in 1937 at Rochester, New York, which received low-duty raw nepheline syenite ore in cars via a ferry across Lake Ontario and processed it for the U. S. trade. This mill was completely described in the January, 1940, issue of PIT AND QUARRY. It was operated as the American Nepheline Corporation.

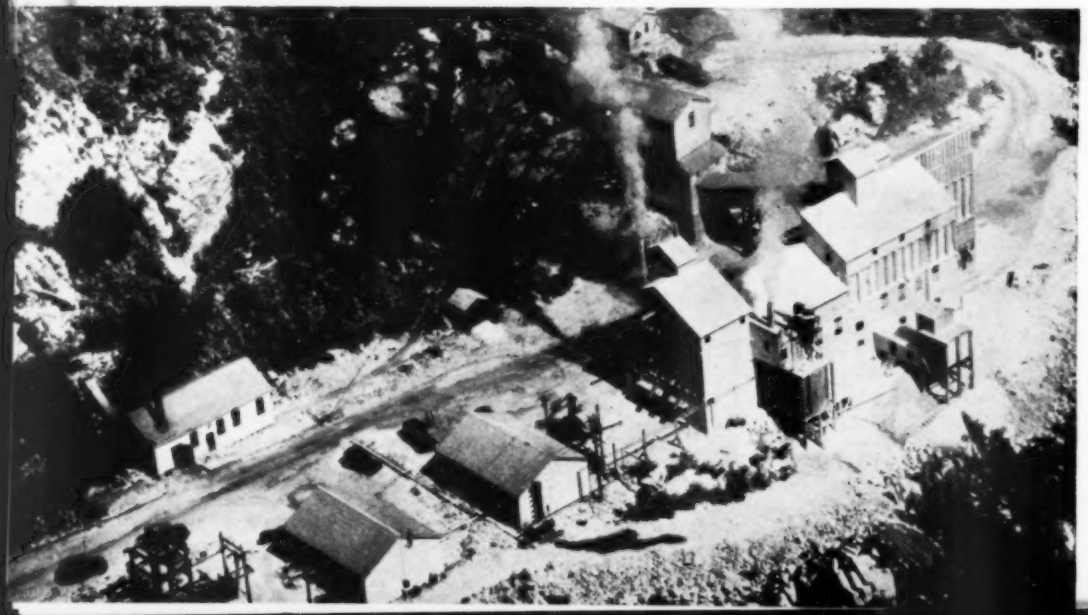
There was little change in these operations until 1946, when additional capacity became necessary to meet increasing demands. One bottleneck was at Lakefield, where more storage was necessary for loading cars with crude ore for shipment to the Rochester mill and with finished nepheline syenite for the Canadian and foreign trade. This problem was solved by purchasing an old cement plant at Lakefield primarily for the rock storage and mill buildings. This plant was originally built by the Lakefield Cement Company and was later purchased by the Canada Cement Company, which shut it down in 1932. This company retains the cement storage silos.

In 1947 a new mill was built at Nephton to further increase production both in Canada and the United States. At the same time a new section of the deposit was opened which had the same chemical composition but which contained biotite mica instead of the feebly-magnetic muscovite mica which is difficult to separate. This change increased recovery considerably, from the former 70 percent to between 75 and 80 percent. This ore naturally freed its iron content at 28 mesh. The nature of the new deposit also made open quarrying preferable.

A drastic change in the company's operations became necessary early in 1951, when the all-year car ferry from Cobourg, Ont., 35 miles south of Lakefield, to Rochester was taken

Left: Drills used in developing the new quarry at the American Nepheline operation at Nephton, Ontario.

Below: An aerial view of the American Nepheline Ltd. plant, taken before the new storage silos were built. The old mine workings are in the background.



by Revised Plant Setup

hauled by truck from quarry and preliminary region of Ontario to plant in Lakefield, Ont., consumer distribution.

out of service. As there was no other economical way to ship the raw nepheline syenite ore to the Rochester plant, it was abandoned and the equipment was moved to the

By WALTER E. TRAUFFER

Nephton and Lakefield plants. This expansion program has just been completed.

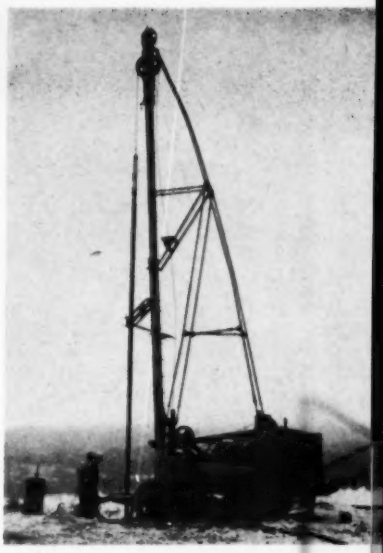
This change actually was for the better for a number of reasons. The Rochester plant was no longer well situated to serve the major United States markets which had moved farther west and could best be reached direct by rail. About 75 percent of shipments now go to points in the United States, and most of this enters by rail at Buffalo. The freight rate differential between raw and finished nepheline syenite had also been reduced. Also, the transfer of equipment had resulted in one 10,000-ton-per-month plant in place of two 3,000-ton plants, with a resultant increase in efficiency and a lowered production cost.

The rock was originally quarried and later mined underground by the shrinkage stope method. There were two 50-ft. wide stopes, one 180 ft. and the other 150 ft. long. Ore cars were loaded through box holes and chutes at the bottom of the stopes and were hauled up a 300-ft. inclined shaft to the jaw-crusher feed bin. In summer the open quarry nearby was worked with three 20-ft. benches. A 1-cu. yd. diesel shovel loaded trucks which hauled the ore 1,000 ft. to the mouth of a 170-ft. raise from the mine. This fed to the same skip-loading bin.

The new corundum-free deposit is ¾ mi. from the mill. Two separate quarry faces were opened in this deposit and are being worked in four 40-ft. benches. These two faces angle away from each other, so that one can be blasted while loading is being done from the other. In opening this quarry, drilling had been done with Canadian Ingersoll-Rand DA 35 automatic mine drifters with 30-in. feed. These were mounted on pin bars supported on columns dropped into shallow holes drilled in the rock. These drills were preferred to wagon drills for the first cut because of the uneven rock surface.

Drilling is now being done with a Keystone churn drill, holes being drilled 5 ft. below grade with a 40-ft. face. Drifter drills are used only in places inaccessible to the churn drills. During the developing of this quarry single-row shots of 10 to 12 holes have been made, bringing down about 10,000 tons of rock each. Later larger shots will be made. Canadian Industries Forcite explosives in 4- by 16-in. cartridges are used with aluminum cases and iron wire to keep from contaminating the raw material with copper. Short-period delay caps are used, and comparatively little secondary shooting is necessary.

On the air drills Craig quick-detachable bits are used. These are made by the Craig Bit Co., North Bay, Ont., owned by E. Craig, vice-president and general manager of



The churn drill now being used at the new quarry.

American Nepheline. These drills are the friction throw-away type and are made in sizes up to wagon drill. They are widely used in Canada in metal and non-metal mines and will soon be manufactured in the United States as well. The overburden is light but occurs in pockets and is removed by bulldozers and by hand.

Loading had been done with the 1-cu. yd. Northwest shovel previously mentioned into contractors' trucks. Most of the loading is now done with a 1½-cu. yd. Bucyrus-Erie diesel shovel. The smaller shovel is kept in reserve. The trucks haul ¾ mi. one way to the raise previously mentioned and to the shafts to the two mine stopes,

Here one of the trucks is being loaded at the quarry by a new 1½-cu. yd. diesel shovel.

A truck dumping a load of rock from the quarry into the shaft to the old mine workings for storage.

which have a combined capacity of 80,000 tons. This storage capacity is sufficient to carry the plant through the winter season, when the quarry cannot be operated. The ore goes into the 14-in. grizzly and bin previously mentioned, and air-operated gates load the 3-ton skip car. Some sledging and secondary shooting is necessary on the grizzly.

The skip car at present discharges at the surface into a bin feeding the 24- by 36-in. primary crusher. It is planned to install a 42- by 48-in. jaw-crusher at the quarry (pit). All the stone would then be reduced to 7-in. minus. If desired, this material could then be hauled direct to the mill, bypassing the underground storage, and be fed direct to a new secondary crusher. A belt conveyor would probably be used to carry ore from the storage to the secondary crusher.

The present primary 24- by 36-in. crusher reduces the ore to 4-in. minus, and it is discharged on a belt conveyor with a Dings suspended magnet which removes all metallic substances such as drill bits, nails and other mine refuse. The ore is discharged from this conveyor into a 3-ft. Symons standard cone crusher which reduces it to ¾-in. minus. This rock is then fed to a 6- by 45-ft. Hardinge Ruggles-Coles direct-oil-fired rotary drier, which removes all moisture from the rock to facilitate magnetic separation and fine screening. This drier is being replaced with a similar 6- by 55-ft. unit to give added capacity.

The dried rock is elevated to the screening station, where two double-deck mechanical vibrating screens remove the minus 3/16-in. material, which is then conveyed to six 4- by 10-ft. Tyler Hum-mer double-deck screens over the magnetic separator storage bins. The plus 3/16-in. to ¾-in. oversize rock from the mechanical screen drops into a bin from which it is fed by a belt to two 3-ft. Symons short-head cone crushers set at ⅛-in.-maximum opening. The crusher product goes to the same mechanical screens in closed circuit.

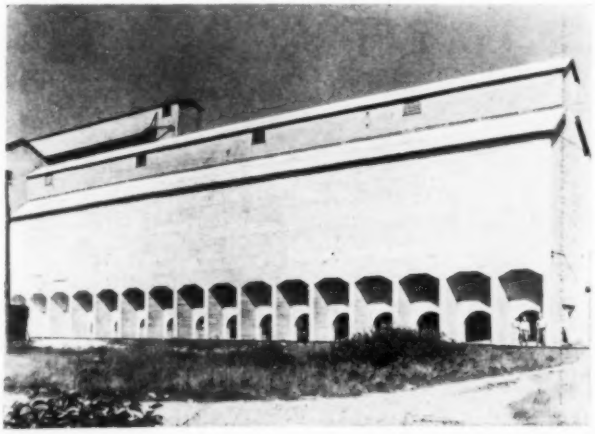
The minus 30-mesh material through the Hum-mer screens passes over the magnetic drum and into the magnetic separator feed bins. The plus 30-mesh material retained on these screens is fed to 5 sets of 14-in. by 24-in. diameter crushing rolls (four Exolon and one Allis-Chalmers) for further grinding, and then returns to the Hum-mer screens.

The minus 30-mesh material is fed from storage bins to three Stearns 30-in. diameter by 30-in. long low-intensity magnetic drums. These reduce the 2.5 percent iron content of the ore to about 0.5 percent. This iron is in the form of magnetite. The product is fed to a battery of high-intensity magnetic separators which further reduce the iron content to 0.07 percent. Included are four double 3-roll Exolon separators, one double and three single 3-roll Stearns and four 3-roll and three single 4-roll Dings separators.

Formerly the magnetic material was wasted, but most of it is now passed to another Dings 3-roll high-intensity separator. This makes a 0.5 percent product which is sold for fiber glass manufacture.

The finished glass-grade nepheline syenite from the battery of separators is passed over a screen to insure removal of oversize particles before it is discharged into two new 700-ton concrete silos. Sirocco cyclones and a Sly bag-type dust collector keep the mill clean.

The finished minus 30-mesh glass-grade nepheline syenite is loaded from the bins into covered 20-ton diesel tank truck-trailers which haul to Lakefield, about 26 miles. When the deposit was first opened, the road was just a trail through game fishing territory, but it has been steadily improved. Within the last few years the road has been straightened and curves and grades have been eliminated, generally



The cement plant raw storage bins at Lakefield, now used for nepheline syenite storage.

A low-intensity magnetic drum separator which makes the first separation, removing most of the magnetite.

speeding up deliveries. A company-owned grader is used to maintain this road. At Lakefield the rock is discharged to concrete storage bins having a combined capacity of 10,000 tons.

The ¾-in. crude rock required by the Rochester mill was hauled by truck to Lakefield, where it was stockpiled and reloaded by a crane into cars for shipment.

At the Lakefield plant the 28-mesh glass-grade material is drawn from storage and fed with electric car control to four 48-in. by 8-ft. Hardinge conical pebble mills which operate in connection with air classifiers.

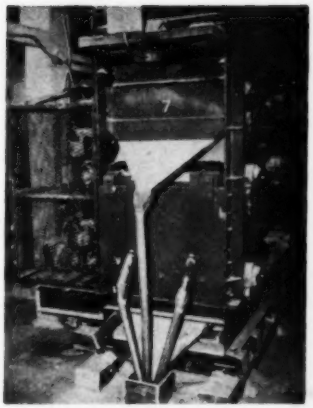
Two 200-mesh grades are now produced. One is the regular pottery grade with 1.5 percent retained on 200-mesh. To meet the growing demand for finer material for pottery, another product is made with 0.5 percent retained on 200-mesh.

Most shipments from Lakefield are now made in bulk by rail in box or hopper cars. There are also two 2-bag packers which load 6-wall, 80-lb. paper bags, largely for foreign shipments. This plant also has a Sly bag-type collector, and some of the collected dust is sold along with the 0.5 percent iron product from the Nephton plant.

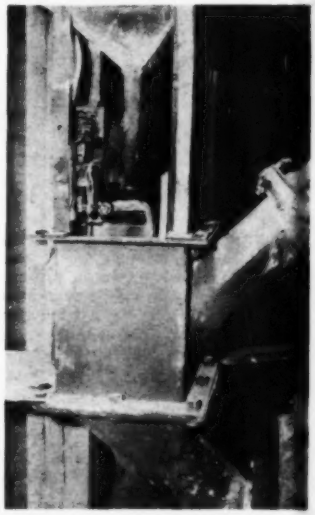
At the Rochester plant the ¾-in. crude ore was passed through a 5- by 40-ft. direct-oil-fired rotary drier and over a double-deck mechanical screen. The plus ⅛-in. material went to a 3-ft. Symons short-head cone crusher and back to the screen. The ⅛-in. to 24-mesh material went to a 36-in. by 8-ft. Hardinge conical mill which was in closed circuit with a 24-mesh screen.

All the minus 24-mesh material was passed over a magnetic drum and to a 28-mesh screen, the oversize returning to the mill and the undersize to five high-intensity magnetic separators.

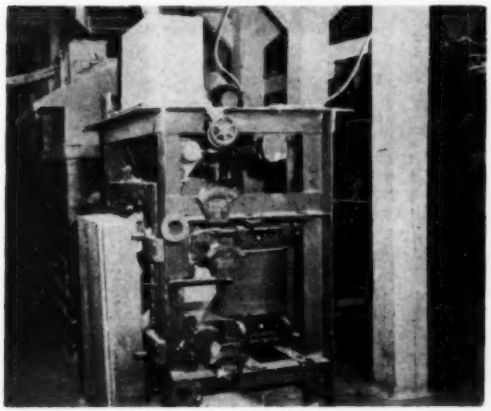
Since its first appearance 14 years ago, nepheline syenite has found wide application in the ceramic industry. In the whiteware industry it is used both as a body and as a glaze ingredient for sanitary and electrical porcelains, semi-vitreous dinnerware, hotel china, fine translucent china, floor and wall tile, art pottery, porcelain liners and balls, and kitchenware. It is also used in the various types of glasses that contain alumina and alkalis in the batch. In enamels nepheline syenite is used as a frit ingredient in ground and cover coats for sheet steel and cast iron. It is used as a mill addition material for ground-coat enamels. Other industrial applications include its use as a fired bond in abrasive grinding wheels and as an intermediate bond for refractory cements.



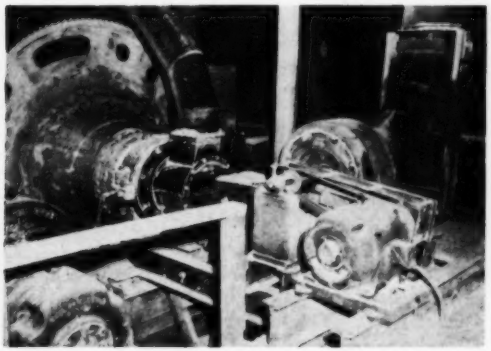
One type of high-intensity magnetic separator in the Nephton plant.



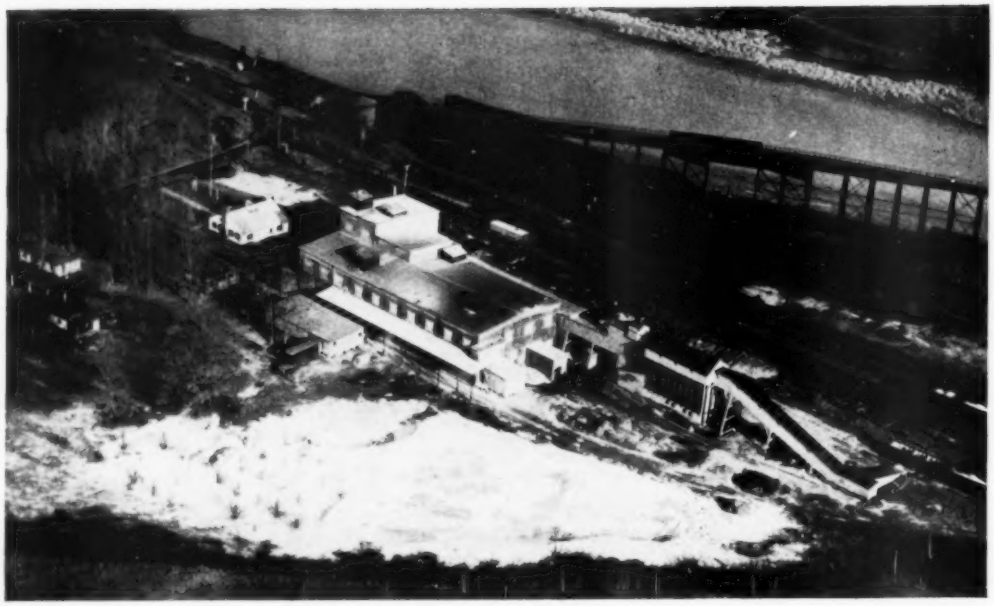
The electric ear which keeps the feed to the conical mill at the most efficient rate.



Another view of the battery of separators.



The 48-in. by 8-ft. conical mill which produces 200-mesh pottery grade at the Lakefield plant.



An air view of the former plant of the American Nepheline Corporation at Rochester, N. Y., which received rock by car ferry from Canada.

The B-grade material is used as a vitrifying agent in some types of structural or heavy clay products. Recently some crude ore has also been sold in Canada to be used as a part of the flux in the manufacture of rock wool. Its use strengthens the fiber and otherwise improves the product.

All of the ceramic research since 1936 from which these applications developed has been done by Dr. C. J. Koenig at Ohio State University. A new laboratory at the plant is used largely for control. It is equipped to make all necessary physical and chemical tests and also for crushing, grinding, and magnetic separation. For example, the iron content is controlled through product-run shift samples. The equipment used for such tests is laboratory size, except for a standard Dings 3-roll separator.

When it became necessary to center the major milling operations at Blue Mountain, the company decided to establish a community there for its employees and changed the name to Nephton. To accommodate its employees—125 of the 150 are at Nephton—eight new houses were built in addition to the five already there; two dormitories were also built. Other facilities include a mess hall, a staff house, a recreation building, etc.

Officers of American Nepheline Limited are as follows: John S. Dickson, president; E. Craig, executive vice-president and general manager; H. R. Deeth, vice-president in charge of sales; J. C. Rix, secretary and treasurer. At Nephton, Joe Wright is mine superintendent, and John Mather is mill superintendent. U. S. sales are handled exclusively by C. L. Cruickshank, manager of the Ceramic Division of the Great Lakes Foundry Sand Company, Detroit, Mich. Sales in England and in Europe are handled by the Union Oxide and Chemical Company of London.

N.L.A. Operating Meeting

(*From page* 89)

Kennedy-Van Saun Rotary Kiln Plant

The final plant inspection trip on the last day of the meeting was to the Lee Lime Corporation's plant at Lee, Mass. The feature of this plant is the Kennedy-Van Saun rotary kiln, with preheater and deheater, which was fully described in the July, 1948, issue of PIT AND QUARRY shortly after it went into operation. This plant has a long history dating back to 1880, when Martin Deely began to supply lime to the New England paper industry. Many improvements were made to these operations during the years, but the most important were those completed in 1948 at a cost of over $500,000. These changes improved the quality and uniformity of the lime produced and also increased the capacity of the plant.

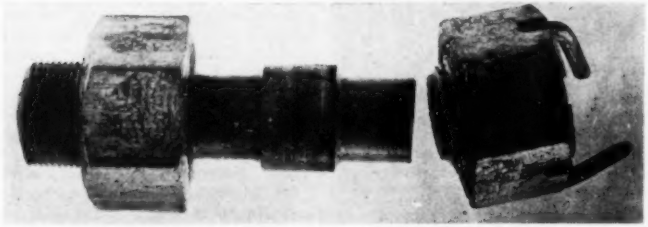
The quarried rock is passed through primary and secondary crushers and dried and screened before going to the kiln feed bins. This makes possible the feeding of uniformly-sized stone to the kiln. Belt conveyors feed the stone to a 100-ton bin over the preheater, this bin acting as surge storage and insuring a uniform feed to the kiln. A fan driven by a 150-hp. motor draws the exit gases from the rotary kiln up through the preheater, bringing the temperature of the stone up to about 950 deg. F. as it enters the kiln. The rotary section of this Kennedy-Van Saun kiln installation is 7½ ft. in diameter by 150 ft. long. The product of the kiln is discharged into a deheater from which the dolomitic lime is conveyed to storage bins. The waste heat from the deheater is introduced into a Kennedy-Van Saun coal pulverizer which prepares the fuel for this kiln.

The members of the inspection party were taken through the plant in groups by members of the Lee Lime staff, who explained all phases of the plant and quarry oper-

(*Continued on page* 98)

Preventive Maintenance of Processing Machinery Equipment

By FREDERICK R. GRUNER
Special Assistant to Manager
Processing Machinery Department
Allis-Chalmers Mfg. Co.

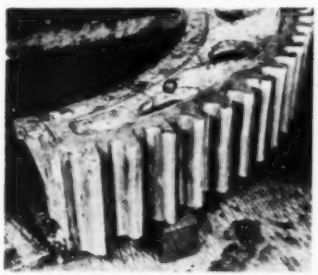


• Side view of low-head mechanism bolt failure after magnaflux testing, which brings out the presence of surface cracks near the starting point of fatigue failure. Characteristics of cracks indicate excessive shear stress set up with tightening of nut.

CONTINUAL equipment breakdown without application of preventive measures is a cancer that eats at the growth and profit of the company. Planned preventive maintenance is the cure. One of its advantages is that the operator decides when the machine is to be inspected, lubricated, and repaired. Planned maintenance chooses the most convenient and least expensive time to do necessary maintenance work. The full productive ability of any machine can be assured through periodic inspection which will indicate necessary repairs before serious failure can shut the plant down.

When business improved after the depression of the thirties, many plants were in very bad condition because necessary repairs were not made, due, no doubt, to lack of funds. At one large plant where the writer spent much time during a rehabilitation program the breakdown maintenance was fantastic. With all the overtime, the maintenance men were the highest paid men in the plant. Even with this high pay they were not happy because they never knew when they would be called out to the plant. The master mechanic worked night and day, seven days a week, trying to get ahead of breakdowns, but eventually gave up and quit. Life was too short to work under conditions like that. There was also a rapid turnover in personnel at the plant and in the office, from the vice-president down, because no progress seemed to be made in overcoming trouble.

The answer was to shut down the plant for a sufficient period to make permanent repairs on the important machines in an orderly manner. Once this was accomplished, minor repairs were soon made during operation, and a planned maintenance program was put into effect. This plant is now operating with very little emergency overtime and much less maintenance expense, and it is in continuous production.



• Worn cast-iron grinding mill gear which could have been reversed to contact new tooth profile. It cannot now be reversed, since the teeth are greatly weakened from wear.

CAUSES OF EXCESSIVE MAINTENANCE COST

Improper Installation The first is improper machine installation. Strict attention should be paid to the manufacturer's recommendations. If the information you have on drawings or in bulletins is inadequate, insist on more information. A poor installation can wreck the performance of a good machine. Attention should be paid to the feed arrangement. Is it large enough for requirements? Will it distribute the material evenly as required? Will the discharge conveyors handle the product without the danger of material backing up and plugging the machine? If possible, have controls interlocked so that the discharge conveyor cannot be stopped without stopping either the feed or the machine.

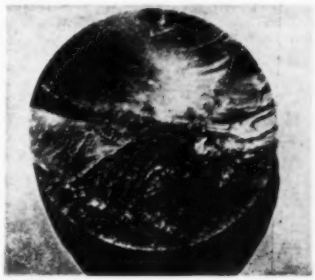
Metal detectors should be incorporated if tramp iron is a hazard. Chutes and most conveying devices should be easily removable to prevent their damage when major repairs are made.

Much maintenance time can be saved by providing adequate supporting beams for hoists or block and tackle to handle heavy parts conveniently and safely. All parts that must be inspected and lubricated periodically should be easily accessible or they will not be serviced.

Wear Excessive wear is caused by dust and dirt entering into moving machine elements. Worn dust seals or material plugging up a machine will force fines through normal clearances between operating parts. The use of lubricants in which abrasive dust has accumulated should also be avoided.

Overload Most machines can take a small overload continuously and larger ones intermittently, but overloads such as that caused by a dipper tooth going through the crusher will increase the load on bearings and gears. Stresses will be increased in the machine frames, shafts, and other parts. Continued overloads, if not instrumental in rapid failure of a part, will seriously reduce the useful life of a machine.

Inadequate Lubrication Manufacturers' instructions regarding lubricants and lubricating periods should be followed



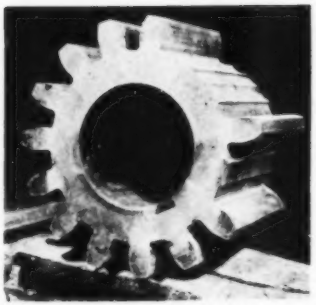
• This 7-in. diameter by 9-ft. camshaft was made of SAE 4340 steel and failed after 27 days of service. Failure was stopped by substituting a lower carbon steel having a higher impact value.

carefully. Much time is spent by the manufacturer in cooperation with leading oil companies working up the lubricant specifications. It is dangerous to experiment. The specification of the correct lubricant is today a very complex problem. Many types of oils and greases are available, and many factors must be considered, such as lubricant viscosity, operating temperature, oxidation stability, filtering qualities, the effect of extremes of climate when machines are in unheated buildings or outside, film strength necessary to carry the load (particularly on gearing), the corrosive effect of the lubricant on the various kinds of materials used in the machine, etc.

Corrosion and Stress Concentration The effect of corrosion on the strength of machine elements is not generally appreciated. Most failures in machine elements occur as fatigue failures. This type shows up very much like a brittle material fracture. A crack starts at some spot generally on the surface, due to a corrosion pit, notch, oil hole, or key way. Under the repeated load of alternate tension and compressions, this crack progresses through the part. Corrosion can reduce the fatigue strength of a part as much as 70 percent. Plain tap water running over a rotating shaft can reduce the strength of the shaft as much as 50 percent. Salt water or other more corrosive water can have even more serious effects. For this reason it is important to keep highly stressed machine parts such as coil springs, etc., free from corrosion to prevent rapid failure.

On the Mesabi Iron Range, heavy steel coil springs supporting a large vibrating screen were failing about every two to three weeks. Metallurgical examination showed corrosion fatigue failure. Inspection of the installation showed highly corrosive wash water running over the springs. This was corrected, and new springs were installed. These springs have been used for several years.

Line-Up of Machine Elements Machines that have a drive with separate bearings resting on concrete or steel foundations are highly susceptible to misalignment. Examples are ball mill and rotary kiln drives. Present design practice is to incorporate flexible couplings in the drive to minimize this effect. This arrangement, however, does not remove the necessity for accurate line up and constant watchfulness in this respect during operation. Gears and pinions should be accurately meshed with proper operating clearance. It is better to have a little too much backlash than not enough. Our company does a very good business in repair pinions for kilns, coolers, and mills. Many of these pinions are replacements for those which had a long service life. Others are to replace relatively new pinions which are meshing improperly.



• Pinion teeth broken from the kiln pinion. Improper meshing caused pinching of gear and pinion teeth. Note that tooth failure progressed from both sides of the tooth.

Vibration Vibration is the enemy of long machinery life. When vibration appears, something is wrong, and trouble will develop sooner or later.

Vibration can be caused by rotating parts out of balance, poor or worn gearing, poor line-up, or design characteristics of the machinery or its supporting structure. Some machines, by their duty, are inherently sources of vibration, for example, gyratory and jaw crushers, vibrating screens, and conveyors. Unless massive foundations are possible, the only recourse is to isolate these machines from the structure by the use of coil springs, rubber vibration mountings, or suspension cables with or without springs, depending on the plane of movement of the machine.

As rotary kilns became longer and are being operated at higher speeds, vibration became a serious problem. This kind of service called for more accurate gearing. It was necessary to make a very complex analysis of the kiln and drive to eliminate operation within the critical speeds. This is the task of the designer and builder; but at the same time, this precision equipment must be carefully inspected periodically to insure proper operation and long life.

TYPES OF MACHINES

A review of some specific types of machines, with suggestions on preventive maintenance, will be helpful.

Gyratory Crushers The shovel operator should inspect the dipper teeth every morning to be sure none are loose and will later fall into plant machinery.

Particular attention should be given to the feeding arrangement. A distributing plate should be used above the crushing chamber to insure uniform wear on the crushing surfaces. Chutes or spouts should be arranged to minimize segregation of fines.

The crusher setting should be checked with pieces of lead dropped into the crushing chamber about 90 degrees apart. The dimension of the crushed lead is the close side setting of the crusher. Under no conditions should this dimension be smaller than that recommended by the manufacturer.

If it is necessary to introduce water into the crushing chamber to keep it clear of sticky material, regulate the water flow carefully so that water does not back up into the crusher dust seal and contaminate the lubricating oil with abrasive material.

In large gyratory crushers with segmented concave liners in the crushing chamber care must be taken to inspect and maintain the proper spacing of these parts. Manganese steel flows under pressure and it must do this to work-harden. After a period of use, the clearance will be taken up between the segments; and if this condition is not corrected, the force caused by this flowing of the liners can break the main frame of the machine, particularly if it is made of cast iron. These spaces should be opened periodically with a torch. An improved manganese steel has been developed which has greater resistance to flowing and has been very successful in use. This material must also be checked, but less frequently.

Jaw Crushers The same general remarks hold for this type of crusher. The main trouble points with these machines are the pitman and main bearings and the toggle ends and seats. The toggle ends should be covered over with a piece of old belting to prevent dust from mixing with the lubricant and wearing the surfaces excessively. A new type of rolling toggle has been developed requiring no lubrication. The main and pitman bearing lubrication, however, must be carefully maintained, and the supply of cooling water must be ample. Babbitted bearing temperatures are not to exceed about 130

deg. F. Automatic lubrication systems are being used to a greater extent and are standard equipment on heavy-duty A-1 jaw crushers.

Vibrating Screens This type of equipment undergoes just about the most severe mechanical service of any machinery in a modern processing plant. A vibrating screen is in effect a continuous fatigue testing machine on all the materials used in its construction. The bearings get the most severe service and, therefore, must be maintained with utmost care. Dust seals should always be in good condition and lubrication instructions should be followed implicitly. If the screens are operating on more than one shift, this should be taken into account in the inspection and lubrication procedure. Grease fittings should be carefully wiped off with a clean cloth before applying the gun. The grease should be the highest quality obtainable and absolutely pure.

Oil lubricated mechanisms should have lubricating oil adequate for the temperature limits of operation. This is clearly shown in the manufacturer's instruction book. Remember the old adage that every 10 degrees over 140 deg. F. operating temperature reduces the useful life of the oil about 50 percent. If screens are operating in high ambient temperatures, discuss your particular problem with the manufacturer, giving the most accurate data you can.

Check the bearings periodically to be certain they are not turning in the bearing housings, a situation which leads to rapid bearing failure by destroying the bearing lineup. Bearing trouble can be detected by an increase in noise in the mechanism, evidenced by a high-pitched whine. In an extreme case, a clatter can be heard. Be sure that assembly and disassembly are done in a clean place. Inspect rollers and races to be sure that no spalling and peening has taken place. Spare bearings, housings, and other vital parts should be on hand to be used when necessary. Dowel pins and holes should be of the proper size to locate both parts of the mechanism accurately. These pins are the sole means of lining up the bearings. Consider that this mechanism is built more precisely than many watches on the market, and that tolerances on the parts such as bearing bores, etc., are a few ten-thousandths of an inch—1/10 as fine as a human hair. With all this precision, it is a rugged mechanism and will last many years if properly maintained.

Generally, on vibrating screens, nuts should be checked over weekly after the initial shakedown "tightening up." Screen cloth should be correctly tensioned. If fine mesh cloth is not giving proper service, a backing-up cloth can be used. A double tensioning device has been developed to supply individual tensioning for both cloths. A protective cloth of large mesh and heavy wire can also be placed over the top of the fine mesh.

Nuts on studs holding the mechanism elements together on each side plate should be correctly tightened. Throw away the extra long-handled wrenches and pipes which only stretch the bolts and destroy the purpose of fitted bolts. In wrench kits, the single-ended wrench supplied is designed for the largest bolt size. Good judgment should be used with this handle on the smaller bolt sizes. See the tables below for proper wrench forces:

Bolt Size	Length of Wrench
½ in.	7¾ in.
⅝ in.	9⅞ in.
¾ in.	11½ in.
⅞ in.	13¾ in.
1 in.	15 in.

Bolt Size	Threads Per Inch	Torque to Reach Yield Pt. of Bolt
½ in.	13	55 ft. lb. torque
	20	55 ft. lb. torque
⅝ in.	11	110 ft. lb. torque
	18	150 ft. lb. torque
¾ in.	10	180 ft. lb. torque
	16	160 ft. lb. torque
⅞ in.	9	260 ft. lb. torque
	14	260 ft. lb. torque
1 in.	8	380 ft. lb. torque
	14	400 ft. lb. torque

From Marks Handbook—Fourth Edition, Page 1086—recommended box wrench lengths.
From "Clamping Force of Bolts," *Product Engineering*, December, 1947.

The vibration of the screen can be checked for uniformity by fastening pieces of cardboard or paper to the side plates at each corner with adhesive tape. A pencil with a sharp point held firmly or in the end of a stick resting on the floor and moved slowly across the paper will give a good diagram of the screen motion. If all corners do not have the same motion, twisting is occurring in the screen frame, and trouble will occur with the side plates or cross members of the screen support deck. When the motion is not uniform, the screen supporting springs should be checked and adjusted for equal compression. Rivets and welding on the screen should also be checked for looseness or cracks.

Grinding Mills Grinding mills, although large and requiring up to 1,000 hp., are relatively simple machines. The general remarks concerning drive and pinion and gear lineup apply especially to mills because of the large horsepower usually involved. The gearing is the principal source of trouble. Extreme care should be exercised to prevent slurry or dirt entering the gear guard.

On mills in cement and chemical plants, most gears and pinions are completely enclosed in a lubrication housing. The housing has a felt seal which bears against an extended rim of the gear. Care must be exercised to keep housing and felt seal in good condition. If not, the opening between the seal and the gear will allow dust to enter. Dust and dirt mixing with the gear lubricant becomes a "lapping compound" which will cause rapid wear.

Vibration due to poor lineup or poor gearing is responsible for many cracked floors and foundations. Bearings should be checked periodically for lineup, since foundation shifting will cause unequal loading and ruin the babbitt.

It is a wise precaution to paint concrete foundations with an oil-resistant paint. Oil spillage and leakage can cause rapid deterioration of concrete.

Periodic inspection of the liners will save replacement of costly heads and prevent damage to the shell. Unless division heads and diaphragms are zincked in place, a race may start which will abrade the shell. At one plant a race at the division head wore ⅜-in. into a 1⅛-in. shell. The mill was down for many hours until the groove was filled with a re-enforcing weld.

Rotary Kilns The drive, riding rings, and support rollers are the mechanical elements of the kiln which require the most maintenance. The mesh of the main gear and pinion should be checked every day to be sure there is sufficient clearance. If a pinion tooth should bottom on the gear, fracture of the pinion tooth would follow. The pinion and gear should have good bearing across the face. The bearing stands for the pinion should be rigid and well anchored to the foundation. Weaving, loose bearing pedestals will soon cause a pinion shaft failure because of the high bending stresses imposed on the rigid shaft.

The V-belt pulleys should be lined accurately and protected from dust by an adequate guard. The belt tension should be checked periodically and the motor should be adjusted if necessary, and cleared of dust.

Because of the high ambient temperature and high contact pressures, the lubrication of the main gear and pinion is very critical. There are available today many excellent gear compounds having high film strength, good stability, adhesiveness, good viscosity, characteristics with temperature variation, and good oxidation resistance.

The speed reducer gears should be inspected for gear pitting, corrosion, or spalling. If these faults occur and the reducer is not overloaded, a change in lubricant may correct the trouble. High-grade very stable oils should be used in the reducer because of the high temperature and heavy loading. Cheap lubricants will sludge up quickly and plug up lubricant passages inside the reducer.

The chain system now generally used in long kilns can be very seriously damaged if certain precautions are not taken. In cement kilns the moisture content at the exit from the chain system should be between 1 and 5 percent. For lime sludge kilns, it should be between 10 and 15 percent. Gases entering the chain system will burn up the chains if the slurry or sludge is too dry. The trouble is usually caused when the kiln is shut down with the exhaust fan still operating. Hot oxidizing gases will then soon burn up the chain system. The remedy is to stop the exhaust fan at the same time the kiln fire is shut off and slurry feed is shut off. The CO_2 gas still being formed will actually prevent serious oxidation of the chains. Sample holes in the kiln shell will provide for the necessary moisture content checks.

The formation of mud rings or dams is a lengthy subject and cannot be covered here.*

The refractory brick lining in the kiln should be inspected periodically and replaced before it is too thin. A hot spot can ruin the alignment of kiln and cannot be remedied correctly. This warping of the kiln shell can cause trouble with riding rings, rollers, and the drive, as well as the lining. The kiln shell should have an adequate number of steel stiffener rings to keep the shell round. These should be about 2 in. thick and 8 in. deep.

The contact between the rollers and the riding rings should be constantly watched. Contact stresses between these parts are very high, and good bearing across the face is imperative. Kiln piers supporting the load at the riding rings are very heavy masses, and unless they are supported on rock, some settling will take place, destroying the alignment of the kiln and rollers. This can be checked if bench marks are established away from the kiln foundation. The carrying mechanisms should be relocated if settling of the foundation has caused misalignment.

It is preferable to line all the rollers with shafts exactly parallel to the kiln shell, and then to "cut" all the rollers a very slight amount, so that the thrust riding ring barely leaves the downhill thrust roller during part of a revolution. The cutting of the rollers must be done with extreme care. The adjusting screws can be used as micrometers. The screws should all be turned the same amount to insure all rollers having the same cut.

The bearing across the face of the tire can be checked by running ⅛-in. diameter lead wire between the tire and the roller. Heavy bearing areas will flatten the wire out more than the lighter pressure areas.

Records can be maintained of the thickness of these wires about every 2 to 3 inches along the length. It is good practice to make a rack to keep these wires, as they quickly show what is happening to the bearing. At the face the wires should be properly tagged giving the date, the number of the tire and the roller, and the end of the wire identified to show which is the uphill and downhill end.

The thrust rollers on kilns are designed to take full downhill thrust of the kiln due to its slope, with all rollers parallel to the kiln centerline. This arrangement will give the longest tire and roller life. To be sure that there is no downhill cut on the rollers, they should be adjusted as mentioned previously.

Coolers The greatest trouble occurs with coolers when they are operated above the temperatures for which they are designed. This holds for air quenching shaking type coolers or the rotary type. Excessive loads of hot material will buckle grate liners and shells. Recuperative-type coolers should be operated with the idea that the machine is primarily a cooler, and that the heated secondary air available for combustion is a byproduct. Too many coolers require excessive maintenance because of the attempt to increase combustion efficiency in the kiln, sacrificing the cooler to obtain it. It is a question of economics; and the slightly higher efficiency obtained from excessive cooler air temperatures, in the writer's opinion, would not compensate for the expensive maintenance in the cooler. Dampers and baffles in the cooler, and the conveying rate of the material, should be adjusted to conform with sensible maintenance practice.

*Tock, W. H., *Operation and Maintenance of Lime Sludge Kilns*, Allis-Chalmers Mfg. Co., Processing Machinery Dept., Milwaukee 1, Wis.

N.L.A. Operating Meeting

(*From page* 94)

ations to them. Maurice Shafer, A. R. Allen, and others of the Kennedy-Van Saun organization supplemented this information with detailed information on the design and operation of the kiln installation.

Those in charge of the arrangements for this meeting are to be congratulated on the excellent job they did. Included are Chauncey C. Loomis, president of the New England Lime Co., who is chairman of the operating division and who presided over the Monday morning meeting; John V. Andrews, who was program chairman; and Robert S. Boynton, general manager of the association. Credit must also be accorded the members of the arrangements committee, which consisted of Mr. Loomis and John M. Deely, president, and John Gaisford of the Lee Lime Corp. Mr. Deely presided over the Monday afternoon meeting. Fred Mallery, National Gypsum Company, Luckey, O., who was not present at this meeting, was unanimously elected program chairman for the 1952 operating meeting.

Washington News

(*From page* 83)

Of necessity these tax increases will raise the manufacturer's price of the products. The Office of Price Stabilization is practically required under present legislation, to permit such price increases. Even if the so-called Capehart amendment to the Defense Production Act were eliminated, OPS would probably permit price increases to compensate for increased excise taxes.

In so far as the tax is passed on to the consumer, this is not necessarily inflationary. It merely represents a transfer of purchasing power from the consumer to the government. The inflationary effect results from the traditional percentage mark-up policies. An increase in the manufacturer's price equal to the tax is translated into far greater price increases as percentage mark-ups are added at each later stage of the distributive process — distributor, wholesaler, jobber, and retailer.

Directors of N. S. G. A. Lay Plans—Hear Progress Reports

By WALTER E. TRAUFFER

another ON THE SPOT report

THE board of directors of the National Sand and Gravel Association held its semi-annual meeting on October 1, 1951, at The Greenbrier, White Sulphur Springs, W. Va. The board of the National Ready Mixed Concrete Association met on the following day, and there was a joint meeting of the two boards on October 3. Attendance was unusually good, with 24 of the 34 officers and directors in attendance, most of them bringing their wives. There were 43 ladies present in both groups. Five of the seven members of the executive committee were present, as were also five of the 16 living ex-presidents. Many important subjects were discussed at these meetings, yet time was left for all to enjoy some of the attractions for which this resort is famous.

Opening addresses were made by Harris N. Snyder (Buffalo Slag Co., Buffalo, N.Y.), president of N.S.G.A., and Vincent P. Ahearn, executive secretary. The sudden passing of H. P. Caldwell (Ohio River Sand Co., Louisville, Ky.) in the hotel on Sunday night was announced. Mr. Caldwell was a pioneer member of the association. The meeting was further saddened by news of the death in Salt Lake City of Eric W. Ryberg (Utah Sand & Gravel Products Co.), who although in poor health for some time had nevertheless attended the 1950 meeting at Sun Valley. Those present paid tribute to the memory of both old friends, and all social events for that evening were cancelled. Tribute was also paid to R. C. Fletcher (Flint Crushed Gravel Co., Des Moines, Ia.) and Hugh Haddow (Millville, N. J.), ex-presidents, and Don D. Reynolds (Boston Sand & Gravel Co., Boston), who had passed on since the last board meeting.

On the brighter side, it was mentioned that the association had gained 17 new members and several new associate members since January, making new record totals in both categories. The financial condition of the association was reported to be excellent, and the coming combined annual convention and machinery exposition is expected to be the largest and best-attended in history. Many more exhibit spaces have already been requested than are now available, and efforts are being made to obtain additional space.

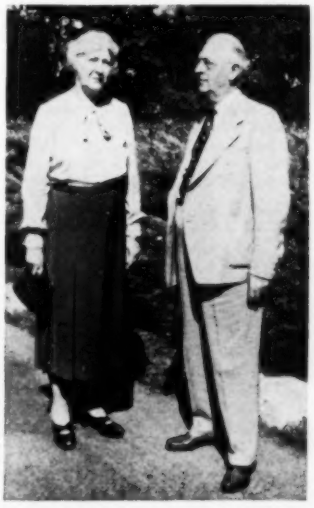
At the joint meeting of the two boards on October 3 the plans for the 1952 joint annual convention and exposition were discussed. This meeting will be held at the Stevens Hotel in Chicago during the week of February 11. No details on the program are yet available, but producers can be sure that these two associations will provide interesting speakers on subjects important to the sand-and-gravel and ready-mix industries. Members have shown their preference for informal meetings, and program discussions will be led by men of the industries. Simultaneous programs of the two groups are unavoidable, but all information vital to both groups will be presented at joint meetings.

The exposition of machinery will be by far the biggest and best yet held, and exhibitors will have their top experts in attendance to discuss producers' needs and problems. Ample time will be allowed in the program for visits to the exposition. There will be a number of luncheons but no evening formalities except the Manufacturers' Reception which will probably be held on Tuesday evening.

It was announced that there were already applications from manufacturers for 171 booth spaces, with only 137 available, and more were expected. It was not known whether or not additional space could be obtained, but efforts are being made to get it, so that all exhibitors can be accommodated with all the space desired. Ralph C. Johnson (Simplicity Engineering Co., Durand, Mich.), chairman of the Manufacturers' Division, said that members are all in favor of a larger show and hoped that the 1954 convention could be held somewhere with more exhibit space. Indications are, he said, that either this must be done or the old mezzanine-type show will have to be revived. This would be a backward step. The assurance of more space, he said, would be a great help in getting more associate members.

It was suggested that perhaps the 1954 convention could be held in Cleveland in consecutive weeks with the National Concrete Masonry Association because some manufactur-

• Robert Mitchell (Consolidated Rock Products Co., Los Angeles); and H. W. Jordan (Metropolitan Sand & Gravel Co., Port Washington, N. Y.).



• Mr. and Mrs. Harris N. Snyder (Buffalo Slag Co., Buffalo, N. Y.).

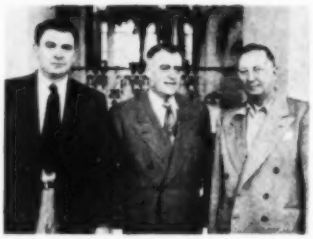
• Russell P. Mumford (Beckley & Meyers Co., Springfield, O.) and Claude L. Clark (Ohio Sand & Gravel Assn.).

ers exhibit at both shows. Cleveland has enough good hotels and adequate exhibit space in its Public Auditorium. Kansas City, Mo., was also mentioned as a possible location as it also has good hotels and a new convention hall which is conveniently located and adequate in every way.

No definite decision was made, but the two boards voted in favor of an outside exhibit in 1954, to be held in Cleveland, Kansas City, or somewhere else if adequate facilities are available. The 1953 convention is definitely going to be in San Francisco, but the headquarters hotel is yet to be decided on. The 1953 semi-annual meetings of the two boards are scheduled for September 30 and October 1 and 2, at the New Ocean House, Swampscott, Mass.

Stanton Walker, engineering director of the association, gave a brief report on engineering activities and some of the engineering problems of the industries at the individual meetings but made his detailed report on matters of interest to both groups at the joint meeting. Before the sand-and-gravel group he said that he considered the present 2-year arrangement of the association with the University of Maryland to be far too short a term, considering the amount the association has invested in its laboratory and equipment there. The board voted to apply for an agreement of at least 5 years' duration or 10 if possible.

Mr. Walker stated that although the association has two fellowships at the university, there were no applicants this year, probably because the $750 stipend is lower than current practice. The board voted to combine the two into one, with a stipend of $1,500 annually, and Mr. Walker was authorized to attempt to get a fellow for the second term of this school year.



• Richard K. Humphries (Pacific Coast Aggregates, Inc., San Francisco, Calif.); E. F. Brovelli (Basalt Rock Co., Inc., Napa, Calif.); R. S. Barneyback (Henry J. Kaiser Co., Oakland, Calif.).

Regarding the Sixth Annual Short Course for Industry Technicians, to be held at the University of Maryland November 12 through 16, 1951, there have been more applicants than space. The tentative program for this course has been prepared. The classes are divided into three groups covering the testing and designing of concrete and related subjects from different slants, to meet the varying needs of those attending. Particular stress will be laid on the application of test results to practical operation.

Mr. Walker stated that tests on various admixtures over a long period, including air-entraining agents and fly ash, have shown that these materials have unexplainable properties and that there is a wide variation in the results obtained with some of them. Any concrete to be subjected to weathering should contain an air-entraining agent, whether fly ash is used or not. He also discussed an evaluation under way of different aggregates from different parts of the country with respect to weathering. Materials from many established sources will be subjected to freezing-and-thawing tests in order to determine their potential life in the field.

The effect of grading on the quality of concrete, said Mr. Walker, is being re-investigated, and other tests in progress include durability of concrete, effect of quantity of mixing water on resistance to freezing and thawing, etc. Regarding the last-mentioned, he stated that, when saturated, richer concrete will break down under freezing and thawing faster than leaner mixes. He also commented on the fact that the cardboard cylinder molds being widely used often expand and absorb water at a period when the concrete has almost no strength, causing cylinder cracks and otherwise affecting the uniformity of cylinders. Mr. Walker stated that efforts are now being made to replace the various freezing-and-thawing methods in use, which vary widely in their results, with a method that will be representative of them all and will eliminate present conflictions. It is this type of work, he said, which not only benefits the industry but also gives the association a high rating with other bodies interested in the same subject.

According to Mr. Walker, the importance of alkali reactivity of aggregates is being overemphasized in some cases, and low-alkali cements are being specified unnecessarily where they are not economically available. The problem of adhesion of bitumen to various types of aggregates is, he said, coming nearer to solution. Siliceous aggregates present the worst problem, but methods are being used which make them

• Mr. and Mrs. E. Phil Gemmer (Texas Construction Material Co., Houston, Tex.).

• Mrs. R. E. Weaver (Lincoln Sand & Gravel Co., Lincoln, Ill.); Mrs. Wayne King (W. S. Tyler Co., Cleveland, O.); and Mrs. A. H. Smith (A. H. Smith, Branchville, Md.).

more acceptable for this use. The addition of anti-stripping agents to the asphalt, Mr. Walker revealed, is a big help. Regarding thermal compatibility of aggregates, he said that the importance of this is no longer emphasized as much as formerly.

In closing, Mr. Walker announced that the new A.S.T.M. specifications for aggregates will be ready in June. He added that these will be more complete than ever before and expressed the hope that the U.S. Army Corps of Engineers and other bodies will adopt them. This, he said, would be a great advantage to both producers and users of aggregates and would simplify many present problems.

Before the joint meeting Vincent P. Ahearn, executive secretary of both associations, reviewed various development of mutual interest. He stated that the delivered pricing bill had passed the Senate and had gone to the House, but felt that there was no assurance of its being passed at this session of Congress. The new Johnson bill to regulate private carriers would put both the sand-and-gravel and the ready-mix industries under complete control, and both have much at stake. This bill would cover trucks, company-owned railroads, marine transport, etc. In California, it was said, private carriers have formed their own organization to combat this legislation, and it has been effective to date.

A brief review was presented of the current program for quarterly reports on wages, hours of work, and conditions of employment. It was agreed that these reports are very helpful to both industries and should be continued.

Before the sand-and-gravel meeting Mr. Ahearn informed those present that the position of the industry is satisfactory with respect to MRO and minor capital additions, as the industry has a good order and a man to deal with who understands the problems of the industry. With respect to major capital additions, the M78 order procedure must be followed, but there is a severe shortage of this type of equipment.

Before this group also Stephen Stepanian (Arrow Sand & Gravel Co., Columbus, O.,) pointed out that the sand-and-gravel producers, as well as those manufacturing ready-mix concrete, are interested in the present and recurring shortages of cement because these cut down the demand for aggregates. He said that some sand-and-gravel plants in Ohio and New York are already shut down for this reason alone. The

Mr. & Mrs. J. W. Murphy, Union Sand & Gravel Co., Spokane, Wash.

shortage of steel, he said, is a contributing factor.

A brief report was given on the status of the sand-and-gravel safety contest in which the interest was reportedly greater than ever before. Results of the contest will soon be announced.

The committee on taxation presented a report on the progress of percentage depletion, and it seems quite certain that the sand-and-gravel industry will receive a 5 percent allowance. Railroad car supply is short in some areas and as a result many cars in bad order are being kept in operation, a practice which causes high repair costs for producers using them. One Southern producer said that best results have been obtained by working directly with the state commissions and by pointing out that in some states the aggregates industries are the largest users of cars.

There was reported to be growing public sentiment on the subjects of stream pollution, zoning, and land rehabilitation. Certainly a time is coming when everyone will be required to conform with public opinion. It was pointed out that sewage and chemical pollution are not the only types involved. With regard to freight rates, it was also stated that best results can be obtained at the local rather than the national level. The railroad *vs.* truck argument was said to be the most potent one.

Following the board meetings many of the members who had not seen the new joint laboratory of the associations at the University of Maryland since important recent aditions to its facilities had been completed went to Washington to visit the lab. Arrangements were made to take them on escorted tours, with staff members to explain the functions of the various testing machines and the significance of the various projects under way. Those attending were invited to be dinner guests of Mr. and Mrs. Alfred H. Smith (A. H. Smith, Branchville, Md.) on Friday evening at their home in Upper Marlboro, Md.

OPS Interprets Status Of Nonmetallic Minerals

A further effort to clarify the Manufacturers' Pricing Order as it applies to the status of nonmetallic minerals has been issued by the Office of Price Stabilization. The text of the interpretation (CPR 22, Int. 33) states that "when the components of a nonmetallic mineral are separated out from the crude mineral solely by mechanical or physical means, such as grinding, washing, leaching classification, flotation, evaporation, dehydration, and like processes, they are still regarded as nonmetallic minerals within the meaning of Paragraph V of Appendix A to CPR 22, and are therefore exempt from that regulation (unless specifically excluded from the exemption by name)."

The following commodities are among those regarded as nonmetallic minerals within this exception when derived from crude minerals: crude salt, natural soda, crude soda, soda ash, muriate of potash, potash salts crude, and related substances.

"Derivatives of crude mineral which are obtained by refining or purification processes involving recrystallization or chemical methods (including carbonation, ionic interchange, or similar methods) are no longer considered minerals and do not fall within the exemption of Paragraph V. . . ."

The interpretation was issued under Sec. 704 Pub. Law 774, 81st Congress, by Harold Leventhal, chief counsel, Office of Price Stabilization.

Asphalt Moved from General To CPR 66 under New Order

On August 1 asphalt and asphalt products were removed from the General Ceiling Price Regulation and placed under control of Ceiling Price Regulation 66, effective August 6. CPR 66 generally sets ceilings on the basis of the highest price charged by sellers for each product to purchasers of the same class during the base period—August 1, 1950, to January 25, 1951.

OPS stated that the longer base period selected for asphalt will cover enough sales to determine representative prices, since most asphalt is sold from April 1 to mid-October.

A bolt of lightning recently set fire to a building at the gravel pit of the Putnam-Hawley Building Materials, Inc., in Potsdam, N. Y. All electrical equipment, which operated the pit and the cinder block plant, was destroyed. The damage was estimated at more than $3,000.

Productivity in the Cement Industry—1939 to 1950

The number of man-hours required to produce a barrel of cement was reduced 8 percent between 1949 and 1950 to the lowest level on record, according to the United States Department of Labor's Bureau of labor Statistics.[1] A study of the cement industry (including portland, natural, masonry, and puzzolan cements) covering the period of 1939 through 1950, indicates that unit man-hour requirements in 1950 were 24 percent below 1939. The 1950 reduction can be attributed largely to a continuation of the trend to shipping in bulk, to plant modernization, and to economies resulting from more intensive use of these more efficient facilities. The highest level of cement production in history was attained in the last year by pushing the rate of plant utilization to the highest point in the 12-year period studied.

Throughout the period there was a very close inverse relationship between the trend of man-hours expended per unit of output for all types of cement and the percentage of plant capacity utilized in the production of portland cement.[2] The sharp year-to-year fluctuations in unit labor requirements are primarily associated with the percent of capacity at which plants are operated. Over a longer period the construction of new plants, the closing of the older and less efficient plants, and the modernization of existing facilities have had favorable effects on unit man-hours. The effect appears only in the gradual diminution of unit labor requirements over a period of years, however; and in any one year the more violent fluctuations caused by changes in the rate of capacity utilization overshadow these long-term influences. Man-hours expended per unit of output are also affected by the number of types of special purpose cements produced and the standards of quality maintained in the manufacturing process. The greater the number of types produced in a plant, the higher the man-hours needed to produce, on the average, a barrel of cement. There has also been a diminution in unit man-hour requirements because of labor time saved as a result of a shift from shipping cement in bags to shipping in bulk.

This is one of a series of unit man-hour reports of the Bureau of Labor's Branch of General Productivity Measurements of the Division of Productivity and Technological Developments. The report for the current year was prepared by Elmer S. Persigehl and Natalie Strader under the direction of Enzo A. Puglisi.

Spurred by the demand for cement for military and industrial construction during the early 1940's, cement production in the continental United States steadily rose from 124,400,000 barrels in 1939 to 184,700,000 barrels in 1942. This 48 percent increase in production was accomplished chiefly by increasing the utilization of portland cement capacity from 48 percent in 1939 to 74 percent in 1942, whereas the total number of plants remained fairly constant. A War Production Board Limitation Order, which became effective August 23, 1942, and lasted until November, 1944, restricted the manufacture of portland cement to three basic types. During the three years between 1939 and 1942, bulk shipments of portland cement increased from 20 percent to 42 percent of the total quantity of portland cement shipped. The combination of increased plant utilization, reduction in the varieties of cement made, and increase in the proportion of cement shipped in bulk, reduced unit labor requirements by 1942 to 8 percent below the 1939 level.

By the third quarter of 1942 the peak of the wartime construction program was reached. Cement production was not curtailed immediately but continued on a high level for a short time, while manufacturers rebuilt stocks which had been reduced below their customary levels. The production cuts began in early 1943, and by the end of 1944 production was reduced to half the 1942 volume. Portland cement plant utilization was reduced to 38 percent of capacity, and man-hours per unit rose in 1944 to a point 19 percent above 1939. A reduction in the proportion of cement shipped in bulk also contributed to the increase in unit man-hours. Bulk shipments of portland cement maintained their relative position during 1943, but declined to 35 percent of the total in 1944.

In 1945, construction activity began to revive. As the movement gained momentum, it pulled the cement industry out of the recession. Cement production rose from 91,000,000 barrels in 1944 to an all-time high of well over 225,000,000 barrels in 1950. During this period the rate at which the portland cement section of the industry operated rose from 38 percent of capacity in 1944 to around 86 percent in 1950. The increase in the proportion of cement shipped in bags, which began in 1944, continued during 1945 and 1946. In 1947, however, bulk shipments again be-

(*Continued on page 105*)

[1]Man-hours per unit of output is a measure of the relationship between one factor of input—labor time—and production in physical units. Productivity data do not measure the specific contribution of labor or of capital or of any other factor of production. Changes in the ratio between man-hours of work and output show the joint effect of a large number of separate, though interrelated, influences such as technological improvements, the rate of operation, the relative contributions to production of plants at different levels of efficiency, the flow of materials and components, as well as the skill and effort of the work force, the efficiency of management, and the state of labor relations.

[2]Portland cement constitutes about 98 per cent of all cement produced.

Production, Man-Hours, Man-Hours per Unit, Output per Man-Hour, and Percentage of Plan Capacity Utilized, in the Cement Industry: 1939-50

Year	Production	Indexes: 1939 = 100			Percent of Portland Cement Capacity Utilized[1]
		Man-hours	Man-hours per Unit of Output	Output per Man-hour	
1939	100.0	100.0	100.0	100.0	48
1940	106.5	106.1	99.6	100.4	51
1941	134.3	124.0	92.3	108.3	66
1942	148.2	136.7	92.2	108.4	74
1943	108.4	114.5	105.6	94.7	55
1944	73.7	88.0	119.4	83.8	38
1945	83.3	92.5	111.0	90.1	43
1946	134.1	123.4	92.0	108.7	68
1947	151.7	136.1	89.7	111.5	75
1948	167.2	141.9	84.9	117.8	81
1949	170.2	141.4	83.1	120.4	81
1950	182.8	139.9	76.5	130.7	[2]

[1] Data on ratio of portland cement produced to manufacturing capacity are from the **Minerals Yearbook** of the United States Department of Interior, Bureau of Mines. Portland cement constitutes about 98 percent of total cement production and is fairly representative of the movement of the industry.

[2] Bureau of Mines data for 1950 are not available. It is estimated by the BLS that the rate of capacity utilization averaged about 86 percent.

Permanente's Kiln No. 5 Sends Annual Output to 7,000,000 Bbl.

southern ON THE SPOT moment

KILN No. 5 began turning in the plant of the Permanente Cement Company in March, 1951, lifting capacity of the huge operation to 7,000,000 bbl. annually.

Although rated capacity *vs.* actual maximum output often misses by the widest of margins, Permanente operating heads proved that the 7,000,000-bbl. figure was quite conservative when production records for the month of May, 1951, added up to exactly 611,000 bbl. of finished cement.

Promptly thereafter, sign painters added a line in foot-high letters to the Permanente sign near the plant entrance—"World's Largest Cement Plant".

It was but a decade ago that Permanente completed its first year of operation in the foothills northwest of San Jose, Calif. Built originally to supply the cement for constructing the Shasta Dam, this Permanente plant started as a two-kiln operation. Subsequent production was planned to supply a purely localized demand. Today, however, its operations are far flung, with storage and distributing plants up and down the Pacific Coast from Long Beach, Calif., to Anchorage, Alaska, and far-off Honolulu, and its cargo vessels carrying cement over the broad sea lanes of the Pacific Ocean.

Permanente had scarcely got into production back in 1940, when Henry J. Kaiser and his associates ordered the first expansion program, to be followed in the summer of 1941 by still another. On August 1 of that year the fourth kiln had

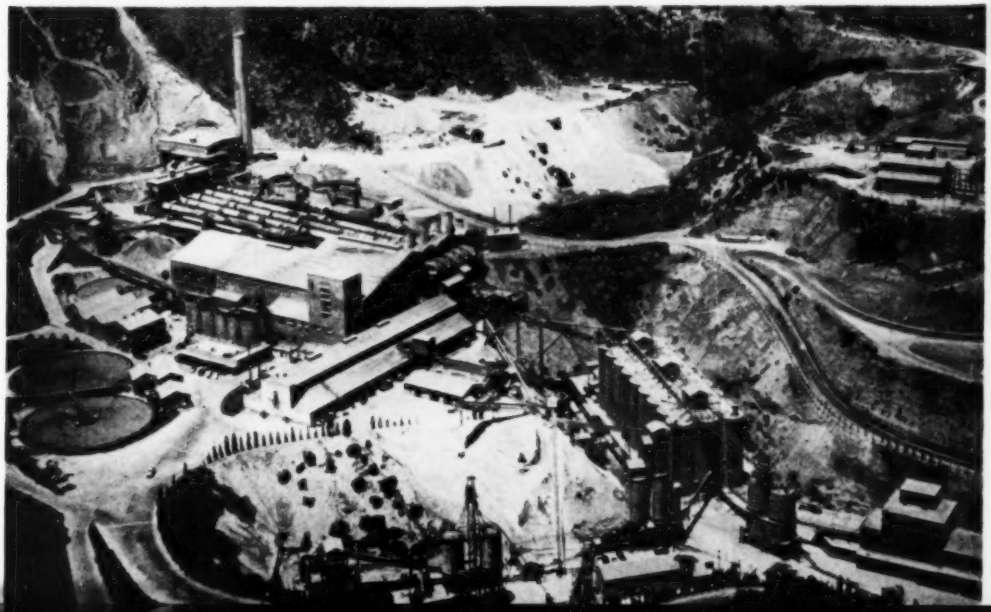
By HARRY F. UTLEY

gone into service, bringing production capacity to 5,000,000 bbl. a year.

The war years of 1942-45 taxed capacity to the utmost, the company meanwhile having installed the present distribution facilities at Honolulu, as well as dock-loading and storage silos at the Port of Redwood City on San Francisco Bay. However, as the country changed over from war to a peacetime economy in 1946, Permanente resumed improvement of plant facilities. Fuller air-quenching clinker coolers were installed on each of the existing four kilns, the resulting gain in operating efficiency adding still another 250,000 bbl. annually to plant output. In July, 1947, the company's new bulk-carrier *Permanente Silverbow* was put in commission for coastwise and overseas shipments. Distribution facilities were again enlarged at about the same time, with the erection of modern facilities at Seattle and, in 1948, the acquisition of a 72,000-bbl. unit on the Portland, Ore., waterfront. Both plants are being enlarged at present.

At mid-century, Permanente entered the Alaska market, erecting distribution facilities at Anchorage and, a little later on, at Fairbanks. The self-unloader *Santacruzcement* (re-named *Permanente Cement*) was acquired to handle the resultant increase in water-borne bulk-cement shipments.

Meanwhile, technical improvements at the Permanente plant involving changes in the method of circuiting and grinding the raw material, the ingenious design and installation of nodulizing equipment



• The most recent aerial photograph of the Permanente Cement Company's plant at Permanente, Calif., shows the five kilns adjoining the mill building. Storage silos, packhouse, and distribution facilities are at the lower right.

• The new electric drill sinking a 7⅞-in. blast hole in the quarry.

for handling and re-burning kiln dust, and the addition of a finish-grind preliminator had upped capacity another 500,000 barrels. As of January 1, 1951, rated capacity stood at 5,600,000 bbl., to be raised another 20 to 25 percent before mid-year when the fifth and newest kiln went into service. The increased kiln capacity was matched by increased grinding capacity, additional slurry-storage, handling facilities, and so on.

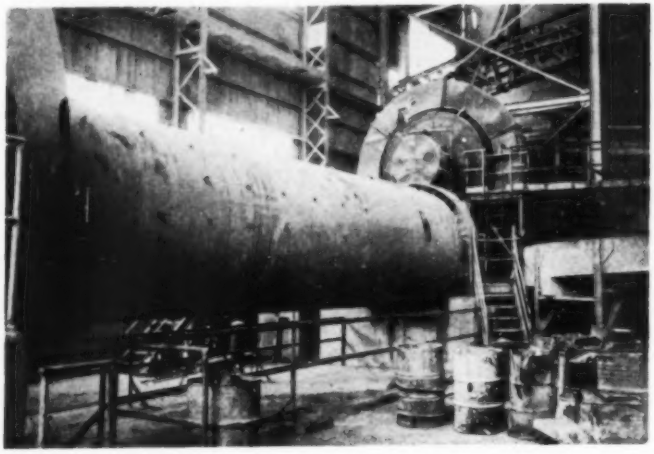
Except for the most recent improvements, these developments have been described in considerable detail in PIT AND QUARRY, promptly as they were carried out.

The new kiln matches the others generally in size. It is a 12- by 448-ft. all-welded tube manufactured, as were three of the others, by F. L. Smidth & Co. The fourth is a Traylor kiln. Clinker output is cooled and the heat is recuperated by a Fuller air-quenching cooler of the latest type, the new installation employing Dietrick suspended-type walls lined with a refractory tile instead of the usual brick walls. All five of the kilns are now lined with a periclase-chrome burned refractory block produced at the Kaiser sea-water plant at Moss Landing, Calif.

The most interesting feature of the new kiln and its function, perhaps, is the fact that about 50 percent of the feed consists of recovered dust, comprising the total dust catch of all five kilns.

Former practice was to pug and feed the dust back into the slurries of the kilns individually, as is the common method in the industry. Dust handling is always a problem, of course, mainly because large percentages of the dust fed back into the kilns, being extremely fine in particle size, are quickly swept up to the Cottrells again, burdening the precipators with an enormous circulating load. In an attempt to overcome this difficulty, the management has for several years been carrying on experiments to nodulize the dust before re-introducing it into the kilns. A method was finally perfected, culminating with the installation of the new kiln. The dust is now combined and pumped to a pair of 7- by 15-ft. steel cylinders which revolve slowly. Upon entering the cylinders, the dust is sprayed lightly with water and corrected chemically and physically to produce the proper balance for kiln feed. During the revolutions, the dust balls up into moist nodules approximately ¾ in. in diameter, and a short belt-conveyor feeds them directly into the kiln through six scoops arranged concentrically around the kiln shell at a point just below the chain section. Approximately 600 tons of dust is thus collected, nodulized, and fed through

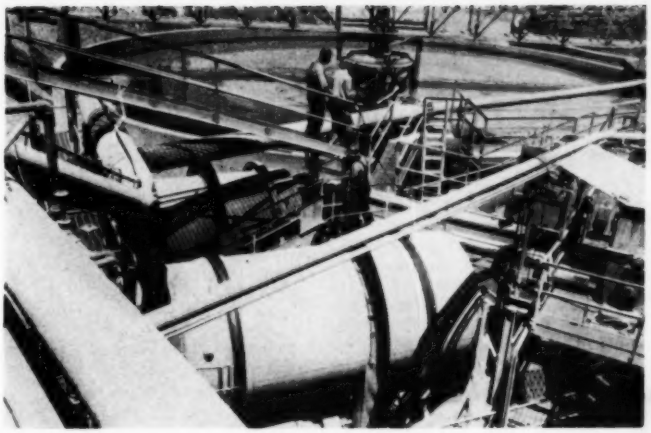
• Looking across the five kilns toward the firing ends. The short stacks in the distance serve the clinker coolers.



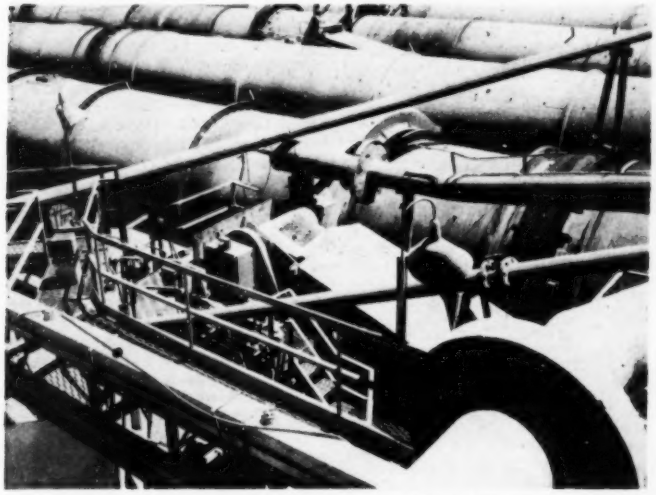
• One of the tube-mills installed to give added grinding capacity to match increased burning capacity.

the new kiln daily; and draft, flame, and speed of rotation can be regulated to this specialized feed so that utilization of the dust catch is no longer the problem it formerly was.

On the raw end, a Smidth 8- by 39-ft. tube-mill and a Smidth 9½- by 10-ft. ball-mill have been added, the new mills being operated initially in open circuit due to a present lack of sufficient thickening capacity. An additional raw-blending tank has also been added. Supply of rock to the raw end and improved fineness of feed were accomplished by the addition of another Symons short-head cone crusher at the secondary-reduction house. The new circuit allows an existing Symons 4-ft. cone to take the full feed from the primary; two short-heads, the new 5½- and an old 5½-ft. unit, are in series with the 4-ft. cone and closed-circuited on themselves.



• These two short, rotary kiln-like cylinders revolve slowly to nodulize the recovered dust before it enters Kiln No. 5.



• Scoop feeders around the new kiln re-introduce the nodulized dust, seen coming off the short belt-conveyor near the center of this picture, for burning.

The 1951 improvement on the finish end involved the addition of Smidth ball- and tube-mills of approximately the same size as those installed in the raw-grinding department. These mills operate in closed circuit in conformance to the system used on the existing mills.

Finished-cement storage capacity was effectively increased by about 58,000 bbl. through the installation of Airslides to gain added live storage at the expense of non-live, since the finished product at Permanente must, of necessity, move out rapidly *via* truck and trailer to its many distributing outlets.

Improvements have also been effected this year in the quarry. Three churn-drills have been replaced by a new electrically-driven Joy Heavyweight Champion blast-hole drill. This drilling machine has not only speeded up operations preparatory to blasting, but has reduced labor costs appreciably. Lost holes have been eliminated entirely; and 300 ft. of 7⅞-in. hole per shift in Permanente's dense limestone is now a routine schedule. The ability of the machine to "over-drill" to permit overshooting, too, has increased quarry output without increasing man-power. The smooth-walled holes have prompted the management to change over to modern cartridge loading instead of using bag powder. The results have been apparent in numerous ways, particularly in improved fragmentation, acording to John Garouttee, works manager.

Productivity

(*From page* 102)

gan to displace shipments in containers, and by 1949 half of the portland cement moving from plants was sent in bulk. In 1946 bulk shipments amounted to slightly under a third of the total. About 1945 producers began to place increasing emphasis on plant modernization and the construction of more efficient plants. The improvements in manufacturing facilities effected during the last few years, coupled with their more intensive use and with a revival of bulk shipments, reduced man-hours expended per barrel in 1950 about 36 percent below the 1944 high and 24 percent below 1939.

Handbook on Stainless Steels Issued by Allegheny Ludlum

A new data and handbook on the stainless steels has been published by Allegheny Ludlum Steel Corporation and is now available for free distribution to users of heat- and corrosion-resistant metals.

In order to fill the growing needs of fabricators and design engineers for more complete on-the-job reference data, material contained in previous handbooks has been completely rewritten and categorized, and much additional information has been added. In its 120 pages the cloth-bound volume discusses approximately 40 different types of Allegheny Metals stainless steel and covers each type from standpoints of analyses, fabrication, heat treatment and special conditions of service.

Report on Current Labor Developments

By S. HERBERT UNTERBERGER

S. Herbert Unterberger & Co.
Industrial and Labor Economist
Washington, D. C.—Philadelphia, Pa.

another P&Q exclusive

IN the September issue of PIT AND QUARRY the Report on Current Labor Problems covered the new rules on merit and length-of-service increases laid down by the Wage Stabilization Board in its revised General Wage Regulation No. 5. Because of space limitations, that report discussed only the optional methods under which such increases could be made without Wage Stabilization Board approval *within established rate ranges.*

Increases in Personal or Random Rate Establishments

Many firms do not have rate ranges because they have no formalized wage or salary payment plan. Instead they use the "personal or random rate method of payment". To avoid repetition, it will be necessary to refer to the September report in describing the rules governing merit and length-of-service increases for such firms. Establishments operating under a personal or random rate method of payment may make merit or length-of-service increases without prior approval of the Wage Stabilization Board under either one of two options which correspond with the past practice and 6 percent options applicable to the rate range method. The allowable amount of increase is computed in the same way under this method as under the rate range method.

However, no individual in a group or establishment operating under the personal or random rate method can receive in any one calendar year more than a 10 percent increase on account of merit and length of service; and the individual who is paid the highest random rate in the group cannot be granted more than a 5 percent increase. This means, in effect, that even though past practice would justify an overall percentage increase of more than 10 percent for the group, it would be impossible to distribute to individuals enough increase to provide more than an absolute maximum increase of almost 10 percent for the group as a whole. This maximum would be reached if every employee in the group received the maximum permissible increase. Since an employer would rarely wish to give the maximum merit increase to every employee, the practical maximum for the group as a whole would be below 10 percent. For example, assuming that the employer felt that 75 percent of his employees were qualified for a merit increase and gave each one the maximum increase permissible, the total amount of increases granted would be about 7.5 percent of the payroll of the group.

In addition, no employee in the group may be raised to a wage rate in excess of that being paid to the top compensated employee. The latter restriction will affect employees receiving rates close to the top. For example, if A, the top compensated employee, is receiving $2.00 an hour and B $1.95 an hour, B can be raised to only $2.00 an hour. However, if A is raised to his permissible maximum of $2.10, B may also be increased thereafter to that rate without violating the regulation, assuming that both increases are otherwise permissible.

The calculation of the 10 percent or 5 percent limitation is based on the wage rate of the employee at the time of the increase, including general increases, but excluding any merit or length-of-service increases granted to him during the current calendar year. If the limitations had to be applied literally, wage increases in terms of fractions of a cent and salary increases in terms of fractions of a dollar might result. Most employers, however, avoid fractions of a cent in making increases. Similarly, salary amounts are most commonly established in terms of whole dollars. Employers who have followed the practice of making their increases in whole cent or dollar amounts may round the amount of the increases to the individual employee to the next whole cent or dollar.

Promotions or Transfers to Higher-Paying Jobs

If an employee has been promoted or transferred to a higher-paying job which has a rate range, the rate within the range to which he may be increased will be governed by the practices or policies set forth in an applicable collective bargaining agreement or written statement of policy or procedure in actual operation on January 25, 1951. If no specific policies or practices are available from any of these sources, the employee may be increased to a rate corresponding to his ability, experience, and training, but in no event above the maximum of the rate range for the job.

In many cases employers may desire to promote or transfer an employee on a trial basis and defer the increase in pay until the employee has demonstrated his ability to hold the new position satisfactorily. Or he may be given an increase to the minimum of the grade, and on the basis of his performance the employer may decide that he is entitled to a higher rate or salary within the range because of his ability, experience, or training. The regulation gives the employer flexibility in these situations by excluding from the definition of merit and length-of-service increases those made to an employee within 45 days of his promotion or transfer.

Employees promoted or transferred into a group with a personal or random rate method of wage payment may be raised to a rate corresponding to his ability, experience, and training. There is a limitation, however, on the amount of allowable increase. Under the wage regulation, his rate may not exceed the highest rate currently being paid to any employee performing similar work, or the rate which was being received by his predecessor on the job, whichever is higher.

As in the case of promotions or transfers into a job with a rate or salary range, the increase may be deferred up to 45 days without being deemed a merit or length-of-service increase.

Compensation Rates for New Employees

Furthermore, the regulation establishes rules which must be observed in the hiring of new employees.

The general rule governing the compensation of new employees hired into a job or position with an established rate or salary range is that they must be hired at the minimum of the range.

The Wage Board's regulation recognizes the following two exceptions to this general rule:

(1) If he has more than the minimum ability, experience, or training required for the job classification, he may be hired at a rate corresponding to his ability, experience, and training. He may be increased within 30 days after hiring, but not above the maximum for his job classification. Such increases are not considered merit or length-of-service increases.

(2) If within the preceding 12

(*Continued on page* 109.)

National Safety Congress Draws 12,000 to Chicago

another ON THE SPOT report

By ROGER R. NOLAN

MANY interesting talks and discussions giving sound safety advice and a variety of colorful exhibits displaying protective safety equipment highlighted the 39th National Safety Congress and Exhibition of the National Safety Council held in Chicago, October 8-12. The extensive program, attended by over 12,000 delegates and featuring over 500 speakers, was held at five of Chicago's leading hotels—the Stevens, Congress, LaSalle, Palmer House, and Morrison.

The exhibits, held in the Casino Room of the Congress Hotel and the Exhibition Hall of the Stevens Hotel, contained dozens of displays of up-to-date safety equipment and demonstrations. On hand to explain the need and use of the devices were qualified men representing well known manufacturers of safety equipment for many industries.

In addition to the hundreds of technical talks, lecture courses, and numerous exhibits, association and small business safety programs were featured this year. The National Safety Council's new program for small businesses—those employing fewer than 100 employees—is well under way. Many of the talks during the congress emphasized the need for the establishment of well organized safety programs in small businesses.

Ned H. Dearborn, president of the National Safety Council, opened this year's program on Monday, October 8, in the Grand Ballroom of the Stevens Hotel. Following a brief introductory program, the nominating committee's report was heard, and the election of officers for the current fiscal year was held. The officers named for the 1951-52 term are as follows: Ned H. Dearborn, president (re-elected); Charles R. Cox, president, Kennecott Copper Corporation, New York, N. Y., chairman of the board of directors (re-elected); O. Gressens, financial vice-president, Peabody Coal Company, Chicago, vice-president for finance and treasurer (re-elected); and R. L. Forney, general secretary (re-elected).

Six Steps To Safety At the keynote session, Mr. Dearborn did not emphasize the progress in accident prevention, but talked plainly of the gaps and weaknesses in the national safety program. Although the over-all accident rate has been reduced the picture would be too horrible to contemplate if widespread and continuing efforts of safety promotion had not been made. In the field of industrial accident prevention Mr. Dearborn called for more co-operation between labor and management, and outlined a national program entitled *Six Steps Ahead*. These steps are (1) the establishment of the machinery for co-operation—organization of individual conferences having a common purpose, safety; (2) starting the machinery—conference meetings designed so that each conference, and individuals within the conference may share ideas with one another; (3) proper use of the machinery—encourage the conferences to analyze safety problems and propose solution of these problems to the council staff for action; (4) belief in each other—faith in each other's advice and suggestions for the common safety cause; (5) national financial and moral support—contributions from corporations within each conference and moral support of conference proposals to the council; (6) constant hard work toward full co-operation—continuous support to maintain the council's general policy, "Safety in Action".

Following the assembly of the national council the various sections comprising the National Safety Congress held their individual group meetings. The Cement and Quarry section program began on Wednesday, October 10, at 2:00 p.m. in the West Ballroom of the Stevens.

CEMENT AND QUARRY SECTION

1949 vs. 1950 Accident Statistics Lea P. Warner, general chairman of the section, started the proceedings with a general report. He extended a welcome to members and gave a report of executive meetings held throughout the previous fiscal year. He reported that the executive committee is constantly endeavoring to enlarge the visual aid program to distribute valuable safety information. He also encouraged members to send any safety suggestions they might have to the association's *News Letter*, which is a medium for reaching industries and members between convention meetings. There has been only a slight improvement over last year in the accident record of nonmetallic minerals industries, he said, indicating that there is still a large amount of work to be done. The following figures on the number of injuries, both fatal and nonfatal, in quarries and nonmetallic mines in the United States support Mr. Warner's statement.

	1949		1950	
	Fatal	Non-fatal	Fatal	Non-fatal
Cement	18	597	18	535
Limestone	27	1,829	15	1,815
Lime	8	798	4	735
Marble	0	227	2	180
Granite	5	574	0	585
Traprock	3	240	2	280
Slate	3	217	1	190
Sandstone	2	344	0	340
Nonmetal mines	10	1,125	20	1,160
Total	76	5,951	62	5,820

The need for more improvement in the accident record, as seen in the above table, was substantiated by the concentrated efforts of the speakers and their respective safety topics.

Explosives Practices F. D. Bickel, explosives department, E. I. du Pont de Nemours and Company, Inc., Wilmington, Del., started the ball rolling with his talk entitled *What's New in Explosives Practices*. Mr. Bickel, first of three capable speakers at the Wednesday assembly of the Cement and Quarry Section, pointed out that exploration into safe methods of handling and firing explosives is never at a standstill. However, he added, despite the increasing efforts to produce and distribute information regarding safety in the explosives field, accidents are still far too frequent. He stated that practically all explosive accidents today are merely repetitions of old violations.

Since every operation is vulnerable to an accident, it is the duty of operators of every plant, firm, or company using explosives in its operations to get every one on the job to promote safety practices, Mr.

L. P. Warner, The Warner Company, Cement & Quarry Section chairman.

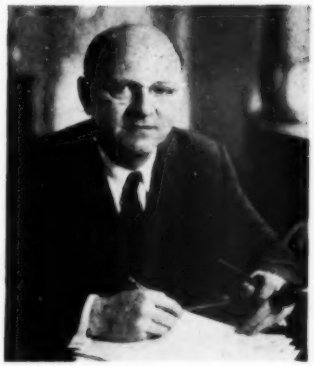
Bickel declared. He urged the education of plant operators, saying that there are still too many who believe "it can't happen here". Prevention of premature firing, which contributes heavily each year to the accident toll, was particularly stressed by Mr. Bickel. He mentioned static as the main cause of premature electrical firing. Interferences which would develop static in the atmosphere, he said, are the presence of lightning, a radio or broadcasting station near the blasting area, or other electrical equipment. In conclusion, Mr. Bickel warned that many accidents are caused by flying materials from explosions, and that it is a primary safe practice to remain at a safe distance from the explosion area.

Severest Hazards Care in guarding moving machinery was the theme of the talk given by O. A. Lawrence, plant manager of the Universal Atlas Cement Company, Buffington, Ind., who shared the topic, *Controlling Severest Hazards*, with Howard Riefenstahl, safety director of the Alpha Portland Cement Company, Easton, Pa. Mr. Lawrence, in his report given at the Wednesday afternoon session, pointed out that despite the presence of guards for moving machinery, operators have been known to reach around or behind guards to make adjustments or repairs. Consequently, he said, all efforts are made to induce men to shut down their machines before making any adjustments or repairs. However, Mr. Lawrence declared, here again the human element is prevalent in promoting accidents. Therefore, he suggested a program which would place separate locks, individually colored to represent the various departments, on all machinery guards. There would only be two keys to each lock, one in possession of the operator and the other held by the foreman of the department. Finally, he stated that a definite set of rules governing the handling of these locks should be set up.

Supplementing Mr. Lawrence's report, Mr. Riefenstahl revealed that the four main causes of the severest accidents in the cement industry during 1950 were moving machinery, electricity, railroads, and carelessness in working in places above ground level. (The last-named cause might be a direct fall of the operator himself or dropping equipment and injuring some one below.) He pointed out that during 1950 those four accident causes were responsible for nearly 90 percent of all the time lost in cement plants due to accidents, for 100 percent of all deaths and permanent disabilities, and 70 percent of all permanent injuries. Mr. Riefenstahl urged that these chief causes of the most severe accidents in the cement industry be attacked through complete safety programs, including proper engineering to provide adequate mechanical safeguards, and education of the worker in the safe way to do his job.

New Officers The Thursday afternoon assembly of the Cement and Quarry Section opened with the election of officers for 1951-52. The following slate was elected: Lea P. Warner, personnel and safety manager, Warner Company, Philadelphia, Pa., general chairman (re-elected); M. C. M. Pollard, National Gypsum Company, Buffalo, N. Y., vice-chairman (re-elected); Harvey Yotter, General Crushed Stone Company, Easton, Pa., program chairman; Ivan LeGore, former program chairman, member at large. Kent Jander of the National Lime Association, Washington, D. C., was appointed secretary, replacing Robert S. Boynton of the same association, who was also elected a member at large.

A. H. Zeilinger, Colorado Fuel & Iron Corp.



Ned H. Dearborn, re-elected president of N.S.C.

On the Job Safety "How can we keep workers from becoming the victims of unnecessary accidents?" With this important question in mind, R. M. Cox, treasurer and general auditor of the Ash Grove Lime and Portland Cement Company, Kansas City, Kan., opened his talk about *On the Job Safety*. Mr. Cox explained that the answer to the above question entailed the proper attitude toward safety, not only on the part of the worker, but also of those in supervisory jobs. Almost any analysis of current industrial accidents, he declared, will demonstrate that injuries are mainly due to a lack of proper safety attitude, rather than to a lack of safety knowledge. He pointed out that great advances have been made in recent years in obtaining knowledge and equipment to combat industrial accidents, but not enough attention has been paid to safety attitude. He declared that an attitude is a state of mind; and so a proper safety attitude must be cultivated.

Mr. Cox proposed the following program to pave the road to accident prevention: (1) learn about safety, (2) live safety, and (3) teach and pass on safety to fellow workers. He said that those in supervisory jobs can create a greater desire among workers for safety. He also said that there can never be an attitude of safety on the part of the worker unless the foreman or supervisor leads the way.

Off the Job Safety A. H. Zeilinger, superintendent of safety, The Colorado Fuel and Iron Corporation, Pueblo, Colo., in his topic, *Off the Job Safety*, said that accident prevention is a 24-hour job with no space boundaries. He stressed the need for safety training in the home as a prerequisite to the ultimate goal of safety procedures in the industry. By making a woman familiar with the hazards of her husband's job and increasing her awareness of safety's importance to family happiness, she can help prevent accidents on and off the job, he said. Mr. Zeilinger suggested that wives be permitted to see their husbands at work to show them the job hazards.

Safety training must be planned, progressive, and continuous, according to Charles R. Zeskey Jr., chief engineer, T. F. Mastin and Company, Kansas City, Mo. Mr. Zeskey's address, *Practical Safety Training for Small Organizations*, and the following discussion concluded the Cement and Quarry Section assembly. In his talk, Mr. Zeskey pointed out certain basic principles in safety training. His plan for improved safety training included good instruction, verbal or visual; good subject matter, well presented; and a good meeting place. Mr. Zeskey also urged that safety training be emphasized for new employees, as they are the ones who will indoctrinate other newcomers in safety practices in the future.

Overall Safety And Awards The overall safety record achieved by the quarrying and nonmetal mining industries in 1950 was better than in any year since statistics were first compiled. The fatality rate of 0.29 per 1,000,000 man-hours and non-fatal-injury frequency of 27.43 both were improved over the 1949 record. In attaining the favorable frequency rates in 1950, the number of fatalities was reduced to 62 or 14 less than in 1949, and the number of non-fatal injuries also was reduced to 5,820 or 131 below 1949.

Winning operations in the 1950 safety competitions conducted by the U.S. Bureau of Mines established some outstanding safety records. The winning plants and their records in 1950 are as follows:

NATIONAL SAFETY COMPETITION:

Quarry Group, Rogers City limestone quarry, Michigan Limestone and Chemical Co., Rogers City, Mich., worked 1,273,376 hours with no injuries.

Nonmetal Mine Group, Limestone mine, Columbia Chemical Division, Pittsburgh Plate Glass Co., Barberton, O.,

Howard Riefenstahl,
Alpha Portland Cement Co.

operated 402,775 hours with no injuries.

NATIONAL CRUSHED STONE ASSOCIATION COMPETITION:

Columbia No. 1 quarry, Columbia Quarry Co., Columbia, Ill., worked 228,758 hours with no injuries.

NATIONAL LIME ASSOCIATION COMPETITION:

Quarry and calcining plant with more than 100,000 *man-hours*, Galloway plant, Ash Grove Lime and Portland Cement Co., Galloway, Mo., worked 241,384 hours with no injuries.

Quarry and calcining plant with less than 100,000 *man-hours*, Evans plant, U. S. Gypsum Co., Evans, Wash., worked 96,363 hours with no injuries.

Underground mine and calcining plant, Kimballton plant, National Gypsum Co., Kimballton, Va., worked 324,032 hours with no injuries.

Calcining plant only, Ludington plant, Dow Chemical Co., Ludington, Mich., worked 77,248 hours with no injuries.

BUREAU OF MINES SAND AND GRAVEL COMPETITION:

Dredge group, Memphis plant, Marquette Cement Mfg. Co., Memphis, Tenn., worked 131,699 hours with no injuries.

Pit group, Quigley plant, Fort Worth Sand and Gravel Co., Inc., Fort Worth, Tex., worked 105,819 hours with no injuries.

NATIONAL SAND AND GRAVEL ASSOCIATION COMPETITION:

More than 100,000 *man-hours group*, Memphis plant, Marquette Cement Mfg. Co., Memphis, Tenn., worked 131,699 hours with no injuries.

More than 50,000 *and less than* 100,000 *man-hours group*, Irwindale plant No. 6, Consolidated Rock Products Co., Irwindale, Calif., worked 99,616 hours with no injuries.

Less than 50,000 *man-hours group*, Kingsbury plant, Fort Worth Sand and Gravel Co., Euless, Tex., worked 49,085 hours with no injuries.

NATIONAL SLAG ASSOCIATION COMPETITION:

More than 60,000 *man-hours group*, Wylam open hearth plant, Birmingham Slag Co., Birmingham, Ala., worked 78,771 hours with no injuries.

Less than 60,000 *man-hours group*, Donora plant, France Slag Co., Donora, Pa., worked 51,275 hours with no injuries.

Labor Developments

(*From page* 106)

months he worked at substantially the same job in another establishment, he may be hired at the same rate he was receiving on his previous job, but not above the maximum for his classification.

In any case, an employee hired into a position with an established salary range cannot be paid above the maximum for the range.

The rules governing the setting of the rate of compensation for new employees hired into groups paid under the personal or random method are the same as those covering promotions or transfers, as described above. However, a person may be hired at a lower rate and raised to the full allowable rate within 30 days. Such increases would not be considered merit or length-of-service increases.

Increasing Output Justifies Expansion of Greek Plants

From the 40th annual report of the General Cement Company, S.A., Athens, Greece, we learn that the firm's "Heracles" works at Drapetsona (Piraeus) and the "Olympus" plant at Volos have been undergoing modernization and expansion since January, 1950. Equipment ordered in the United States began arriving in March, and by November items included in the second part of the order were received at Piraeus and Volos. At the end of 1950 about 30 percent of the work at Drapetsona had been completed.

Production of the company's two plants during 1950 rose 13 percent for clinker and 28 percent for ground cement over the 1949 totals. Out of a total of 5,082,000 tons of cement produced in Greece since 1902, the two General plants turned out 2,293,000 tons from 1911 to 1950.

Batesville White Lime Co. To Build $1,000,000 Plant

C. E. Baxter, general manager of the Batesville White Lime Company, Batesville, Ark., has announced that a new $1,000,000 limestone crushing plant will be built at Center's Bluff near Batesville. The plant will supply 500,000 tons of limestone annually to the Aluminum Company of America's facilities now under construction at Bauxite, Ark.

The new Batesville plant will be served by a $100,000 power line and a $50,000 Missouri Pacific spur.

INFLATION—AND YOUR INCOME TAX

I would rank defense of the dollar as equally important with defense against Communism.—Edward A. Keller, director, Bureau of Economic Research, University of Notre Dame.

WHILE Congress debates tax increases, inflation has already increased sharply the tax burden of taxpayers. This peculiar byproduct of inflation has gone unnoticed, yet it should have great significance to every American having taxable income.

As the real value of the dollar continues to decline, the income tax

By HAROLD J. ASHE
Tax Counselor

assessed against the individual taxpayer rises without benefit of any legislative action whatsoever.

Those who give only superficial consideration to inflation see no danger in the decline in the value of the dollar. Their argument, in all its simplicity, runs about like this: if people get twice as many dollars, each of which is worth only half as much, their position is the same as before the decline in the dollar's value.

Deluded by the feel of more dollars —even though they are less— not a few businessmen subscribe to the idea that "a little inflation is good for the country". A little inflation, like a little dope, may create a temporary feeling of exhilaration. The trouble is that a little inflation—as is true of a little dope—calls for more, as the first stimulating effects wear off.

It is not necessary for inflation to run its full course, as in post-World War I Germany, to be felt and understood. There, of course, it reached a point where a harried shopper had to use a wheelbarrow to carry paper money sufficient to buy a loaf of bread. By the time the housewife got to the bakery, her money had so depreciated that it would buy only half a loaf. The price, in nominal marks, for mailing a letter rose to astronomical figures. Stamps were printed in 50,000 and 300,000 mark denominations, and whole issues were surcharged into the millions of marks.

If creeping inflation accelerates its tempo into galloping inflation, the income tax bite will become ever greater. The reason for this situation is found in the income tax law. Exemptions and deductions are fixed arbitrarily and do not change as the dollar declines in value. The value of a $600 exemption is already worth less to the taxpayer than a $500 exemption only a few years ago. Indirectly, then, it is obvious that exemptions are reduced as the value of the dollar declines.

Income tax rates are not pegged to the value of the dollar. Thus, as a taxpayer's taxable income rises in an inflationary period (even while his dollars are declining in value), he is pushed into higher and higher tax brackets. A larger and larger share of his income is subject to income tax—and at higher rates.

For example, if the 1951 dollar should decline in the next few years to a 50-cent dollar (in terms of the 1951 value of the dollar), this would mean that a $25,000 net income might rise to a $50,000 net income. In terms of real value the $50,000 net income would be no greater than the 1951 income of $25,000. This, if the individual could retain all of it. He can't. That's where income taxation intervenes and, percentagewise, takes a bigger chunk out of the inflated income than out of income before the inflation.

On the score of income taxation alone, the theory that a little inflation is good for the country actually resolves itself into a ludicrous situation in which a lot of heavier taxation is good for the individual. This last, obviously, is just not so. Those who advocate and profess to like a little inflation scream lustily against a lot of heavier taxation, not realizing that one of the real causes for their tax rise is inflation!

After income taxation is taken into consideration, the $50,000 income in 195X is not, in fact, the equivalent of the 1951, of $25,000, even though the 1951 dollar in 195X is worth only half as much as in 1951. Here's why. On 1951 income, the tax (based on 1950 rates) is $6,116. This leaves $18,884 in 1951 dollars. In 195X the tax on $50,000 is $18,648, leaving $31,352 in 195X dollars. However, in terms of 1951 dollars this 195X income, after taxes, is only $15,676. Real income, based on the 1951 dollar, has been reduced 17 percent. This is just one of the tangible, demonstrable effects of inflation, but it is an important one.

The foregoing assumes that the taxpayer is able to keep up with the inflation rat race. If he cannot, his real income will decline even more sharply. For example, the 1951 100-cent dollar drops to a 50-cent dollar. * The taxpayer with 1951 net income of $25,000 increases his net income in 195X to $40,000. That is, he is not keeping up with the race. In this case his 195X income tax will be $13,036, leaving 195X income after taxes of $26,964. Adjusted to 1951 dollars this will be $13,482, or a loss in real income after taxes of $5,402 or 28.6%.

(*Continued on page* 112)

*Note, for comparative purposes only, the 1951 dollar is assumed to be a 100-cent dollar. It should not be confused, in this discussion, with the 1939 100-cent dollar usually used for comparative purposes, which currently stands at about 54 cents. To use the 1939 dollar would only complicate and obscure the illustrations. Also, the 1950 tax rate is used, both for 1951 and for 195X, in order not to confuse the tax implications of inflation by injecting a higher tax rate for later year. Actually, of course, to the extent that income tax rates are increased, to that extent will the net (after taxes) be further reduced.

How Inflation Reduces Real Earnings After Taxes

This illustrative table assumes a family unit of husband, wife and one child, a standard 10 percent (or $1,000) deduction, and filing of a joint return.

1951 Net Income	195X Net Income after Inflation	1951 Tax (1950 Rate)	195X Tax (1950 Rate)	1951 Income after Tax	195X Income after Tax Adjusted to 1951 Dollar	Reduction in Real Income after Taxes
$ 2,000	$ 4,000	None	$ 360	$ 2,000	$ 1,820	9.0%
4,000	8,000	$ 360	1,108	3,640	3,446	5.3%
6,000	12,000	720	1,992	5,280	5,004	5.2%
7,500	15,000	1,009	2,780	6,491	6,110	5.8%
10,000	20,000	1,504	4,328	8,496	7,836	7.7%
12,500	25,000	2,122	6,116	10,378	9,441	9.0%
15,000	30,000	2,788	8,176	12,212	10,912	10.0%
20,000	40,000	4,328	13,036	15,672	13,482	14.0%
25,000	50,000	6,116	18,648	18,884	15,676	17.0%
50,000	100,000	18,648	51,624	31,352	24,188	22.8%
75,000	150,000	34,050	90,072	40,950	29,964	26.6%
100,000	200,000	51,624	132,204	48,376	33,898	29.9%

Note: While tax rates undoubtedly will be raised, if they have not already been raised by the time this is published, 1950 tax rates have been used for comparative purposes to illustrate the impact of inflation after income taxes. Two different tax rate structures would only confuse the point here made.

Thriving Aggregates Business Is Aftermath of Fire

By HARRY F. UTLEY

another ON THE SPOT report

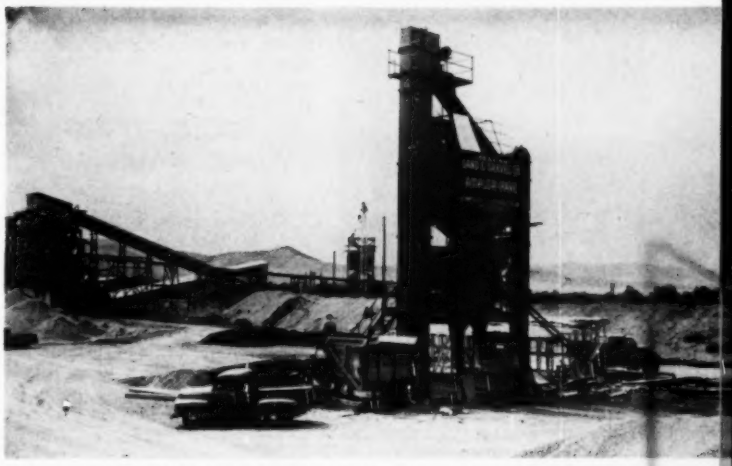
A quarter-century ago George F. Jacoby was a building contractor in Helena, Mont. when, in 1927, fire ravaged much of the business district of Montana's capital city. In the rebuilding, Mr. Jacoby was to play an important role. Lack of a dependable source of sand and gravel forced him to erect a small aggregates plant near the city. Through the years this Telsmith-equipped plant has been continually expanded and improved until today it has a capacity of 150 t.p.h.

In 1942 Mr. Jacoby left the contracting business entirely to devote his full attention to the production of aggregates and railway ballast. Then, in 1945, he added a modern ready-mixed concrete plant which today is served by a fleet of eight truck mixers. Two-thirds of the aggregate-plant output is currently captive tonnage, being utilized by the concrete batch plant and in the latest addition to the facilities, an Amalga-Pave cold-mix asphalt plant. More of the latter a little later on.

A native of Helena and imbued with considerable civic pride, Mr. Jacoby had long deplored the lack of hard surfacing on many of Helena's important streets. Adequate paving he could, of course supply from his existing concrete plant. But the cost would be greater than most property owners were willing to pay.

In seeking a high-type, yet low-cost, durable paving material, as well as an economical method of producing it, Mr. Jacoby analyzed the available products and processes on the market and selected Amalga-Pave. The necessary plant to produce this cold-mix, cold-laid asphalt was available for quick delivery at a cost less than one-half that of a regulation hot-mix plant of comparable capacity. Various cities which had used the material seemed highly pleased with their Amalga-Pave streets, and the cost per yard, installed, was low enough to interest the most economy-minded property owner.

The new plant, manufactured in Los Angeles for National Amalga-Pave, Inc., Beverly Hills, Calif., was shipped and speedily erected in July, 1951, on Mr. Jacoby's property, the Helena Sand & Gravel Company. Meanwhile, the company had already booked about $100,000 worth of advance business in the cold-mix material for use on Helena's streets, driveways, parking lots, etc. At the same time, Mr. Jacoby purchased the necessary spreading and rolling equipment, so that he could do the entire job from start to finish. Needless to say, the



• The new cold-mix asphalt plant of the Helena Sand and Gravel Company at Helena, Mont. The sand-and-gravel plant and the cableway mast are seen in the background.

• A dump truck being loaded with cold mix while another truck (right) dumps aggregates to be elevated to the bins.

• One of the firm's first paving jobs was on Helena's Broadway. The capitol dome is seen in the background.

• Left: This hammermill, located above the mixer, pulverizes the lump asphalt.

• Right: A view on the batching floor, where all cold-mix ingredients are carefully proportioned by weight.

new plant has been operating at capacity ever since. Much of the material employed in the product consists of pea gravel, of which a large surplus had accumulated at the aggregates plant.

Since the Amalga-Pave plant employs no rotary drier, steam boiler, dust-collecting equipment, blowers, or screens, operation is a simple matter, requiring only one operator and a helper. At the Helena plant aggregates are trucked over and discharged into the boot of an elevator which raises them to the 75-ton, 3-compartment bin at the top of the unit. Gates in the chute leading from the elevator to the bin are controlled from the batching floor, permitting the proper aggregate size to enter its proper bin section.

Lump asphalt of 0 - 5 penetration and a melting point in excess of 250 degrees is broken to "nut" size at ground level and elevated to a Williams impact mill, located near the mixer, where it is finely pulverized before entering the pug-mill mixer along with the aggregates and flux oil. All ingredients are carefully batched by weight. The special "B.G.S." flux oil may be pumped at normal atmospheric temperatures and requires no heating. Too, the oil is able to displace any moisture in the aggregates; so there is never any concern over wet aggregate. A 1-minute cycle—15 seconds to batch and 45 second to mix—is employed; and the finished mixture is discharged directly into dump trucks and delivered to the job. Should the plant "over-run", the Amalga-Pave mixture is merely stock-piled for use the next day—even the next season if that should be necessary, because the material retains full workability and cohesion over long periods.

Despite shutdowns caused by ten days of rainy weather, the company mixed and laid over 250,000 sq. ft. of Amalga-Pave during the first month's operation of the new plant. Plans are now in progress for the company's biggest single job, the paving of the runways of Helena's Municipal airport.

Since the new plant went into service, many persons, principally aggregates and ready-mix producers like Mr. Jacoby, have inspected the operations with the idea of possibly adding similar facilities at their own plants. Several of these have been fellow Montanans who first heard of the installation during the recent 1951 annual meeting of the Montana Ready Mixed Concrete Association. Mr. Jacoby was elected to the presidency of this organization, and his superintendent, Gene Fehlig, was chosen secretary-treasurer.

Inflation

(*From page* 110)

The sale of capital assets during a period of inflation may prove to be a deadfall for the unwary. Prices, expressed in dollars, may rise even though *real* value does not. Thus, a certain capital asset might experience no *real* gain in value. Yet because of inflation it might be sold at a paper profit carrying a sizable *real tax*. We have this situation right now on a moderate scale.

Inflation may distort net taxable income in other ways. For example, depreciable assets, during a period of inflation, must continue to be written off on the basis of original (pre-inflation) cost. This, even though their value, expressed in nominal dollars, has been inflated, along with everything else.

Thus, this cost-of-doing-business item will not rise as other costs rise. This lag will create an additional net profit which, in fact, is artificial but which, nevertheless, is taxable. And this added profit is taxable at the highest rate any of the taxpayer's income falls. Note the following example:

	1951	195X
Net profit before depreciation charges	$20,000	$40,000
Depreciation charges	4,000	4,000
Net profit after depreciation	16,000	36,000

While net profit *before* depreciation charges doubles, net profit *after* depreciation charges has risen 2¼ times.

Exactly how is the value of the dollar reflected in rising prices? The following table shows this devaluation of the dollar in its simplest terms.

Your Dollar and Inflation
Assuming 1951 dollar at 100 cents for comparison

Rise in Price Over Base 1951 Period	Value of Dollar
None	$1.00
5%	.95
10%	.909
15%	.869
20%	.833
25%	.80
30%	.769
40%	.714
50%	.666
75%	.571
100%	.50
150%	.40

Paul B. Reinhold, president of the American Road Builders' Association, has announced that the 50th anniversary meeting of the association will be held January 21-24, 1952, at the Rice Hotel in Houston, Tex. This convention will be followed by a trip to Mexico. Mr. Reinhold suggests that those interested in the Mexico trip make their reservations early with headquarters in the International Building at Washington, D. C.

Precision Sizing Accomplished by New Separator at Napa Perlite

FEW processing operations in the nonmetallic-minerals field involve more critical sizing than does perlite ore. Since perlite expands eight to ten times in volume when subjected to heat, and since it is quite undesirable to size the "popped" perlite, even the slightest variation in grain size in the raw product is multiplied many fold after expansion takes place.

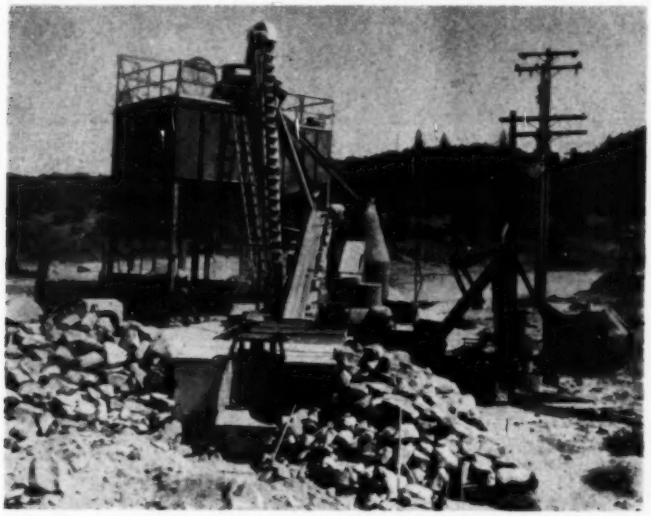
Before the Napa Perlite Company of San Francisco erected its simple, yet highly-efficient plant near St. Helena, Calif., early in 1951, it made quite an exhaustive investigation of all available screening and separating devices in order to insure clean separation and laboratory-accurate sizing of the finely-ground raw perlite. Its ultimate choice of a Sweco Separator to do the job seemed the logical one at the beginning; and now, after many months of operation, the management praises the unit highly.

This screening device is a relatively new development of the Southwestern Engineering Company, Los Angeles. It utilizes circular screen cloth in single or multiple decks. At the Napa plant, one 4-deck, 48-in. diameter unit is used to do all the sizing. Vibration is accomplished by eccentric weights on the vertical shaft, the entire unit being self-contained and housing its own 1-hp. motor. Each screening surface is held taut and slightly concave, the material entering each deck at the center and moving in a spiral path, always slightly uphill, toward the circumference. Particles are tumbled gently, not bounced, so they align accurately with the mesh openings of the cloth for maximum passage of the undersize. Throughs from each screen deck are returned by a gathering cone to the center of the next lower screen, where the tumbling, spiral spread is repeated. Production capacity of the separator at the Napa plant is about 10 t.p.h. of sized perlite ore in the No. 10 to No. 40 mesh range.

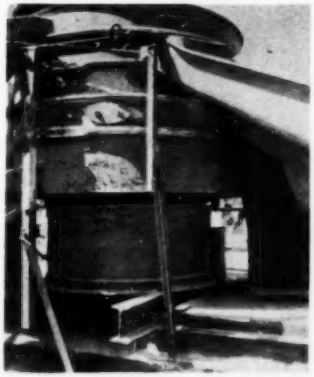
The crushing-and-screening plant is situated at a deposit on the Holt Ranch 3 miles east of St. Helena and about 75 miles north of San Francisco. The perlite rock in this area occurs as a volcanic flow which varies up to 100 ft. in thickness and lies in northwest-trending anticlines and synclines. In general, the ore is dark gray in color and dacitic in composition. Overburden is thin.

Only occasional blasts are required at a small face opened up close to a Pacific 10- by 30-in. primary jaw-crusher. The rock is slushed to the crusher, the minus 2-in. product being carried by a short belt-conveyor to a set of Pioneer 18- by 30-in. rolls set at approximately 3/8 in. A bucket elevator carries the product of the rolls up to the Sweco Separator at the top of the plant. Material scalped off the No. 4-mesh top deck is spouted back to the rolls, while that retained on the No. 10, No. 14, and No. 40 mesh cloth on the lower three decks is finished product and is spouted to the truck-loading bins below. In greatest demand is the ore sized within the No. 14—No. 40 range, used to produce perlite plaster sand. The output is trucked to northern California "popping" plants, and is available for shipment to other areas.

Clayton T. McNeil, a mining engineer, heads the concern; Fred Holt supervises plant operations.



• A general view of the Napa Perlite plant near Napa, Calif., as seen from the face of the quarry. The primary crusher is in the foreground.



• The enclosed 4-deck, 48-in. diameter circulator vibrating screen which does all the sizing of the raw perlite ore.

• This view shows the top deck of the circular screen (or separator). Plus 4-mesh rejects are spouted back to the roll crusher.

Net sales for the 12 months ended June 30 reported by the Alpha Portland Cement Company were $24,052,590, as compared with $20,281,630 last year. Net income this year was $3,528,447 or $6.01 per share; last year's corresponding figures were $3,128,552 or $5.31 per share.

Independent Circuit Assures Peak Production of Fines for Agstone

another ON THE SPOT report

AT Scottsburg, Indiana, 30 miles north of New Albany, the Scott County Stone Company several years ago built an entirely new crushing and screening plant for the production of road stone, concrete aggregate, and agricultural limestone.

By WILLIAM M. AVERY

• A general view of the Scott County Stone Company's modern plant at Scottsburg, Ind. The primary crusher building is at the far left, bins for the storage of agstone and other stone products at the right.

Replacing facilities which the company had operated at the same location for a number of years, the new plant effected a considerable increase in productive capacity as well as in over-all efficiency. Stone is quarried from an extensive deposit of high-calcium material, and is fed through the primary crusher at the rate of 1,400 tons per average 8-hour day. About a third of the total tonnage can be reduced to agricultural limestone by utilizing a separate independently-fed circuit which the layout provides.

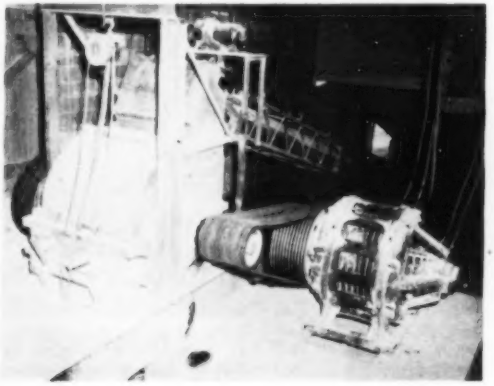
Overburden throughout most of the deposit averages about 10 ft. in thickness. It is stripped and loaded with a shovel and hauled in dump trucks to nearby spoil piles. Since the formation has a natural line of cleavage at about the 20-ft. level, the deposit is worked in two ledges. The upper portion is relatively soft, while the lower ledge, which is worked to a depth of about 14 ft. below the cleavage line, consists of hard blue stone that readily meets the exacting requirements of state road specifications. At present the working face is about 400 ft. long.

All drilling is done with a T3-50 Sullivan wagon drill which operates on compressed air supplied by a 500-c.f.m. Gardner-Denver portable compressor. Carbide drill tips are used exclusively, starting with 2-in. diameter and finishing with 1⅞-in. diameter. The drilling rate varies from 85 to 90 ft. per hour, and the yield per bit is approximately 300 holes. The two-man crew that handles all primary and secondary drilling, as well as blasting, puts down 36 to 40 holes per day. Most shots utilize three rows of holes, with burden and spacing both about 5½ ft. Rockmaster delay caps are used with 60 percent Gold Medal 1½- by 16-in. gelatine dynamite. Primary blasts involving about 60 holes, loaded with approximately 1,500 lb. of dynamite, are usually made every other day, and the average yield on such shots is around 3,000 tons. Breakage is exceptionally good, particularly in the lower ledge of stone, and secondary shooting is usually necessary only one day per week.

The quarry is exceptionally well drained. A deep hole, made by pre-

• The wagon drill operating on the upper ledge of the quarry. The 2-in. holes are drilled at the rate of 85 to 90 f.p.h.

• The 36- by 36-in. impact crusher which is used for agricultural limestone. The feeder is located under the truck hopper at the right.



vious owners many years ago, has been utilized for this purpose by maintaining sufficient slope in the quarry floor. As water accumulates in the hole, it is pumped to a nearby creek.

Stone is loaded at the face of the quarry with a 1¼-cu.yd. Marion shovel, and the ¼-mile haul to the primary crusher is made with three end-dump trucks which haul about 7 tons per trip. In an average day about 200 loads are hauled. The 25- by 40-in. Austin-Western jaw crusher is driven by a 150-hp. General Electric induction motor, and it is fed from a receiving hopper by means of an Austin-Western apron feeder. These units are fully enclosed in a concrete masonry building.

Stone is discharged from the primary crusher onto a 30-in. wide inclined belt conveyor which delivers the material to a 4- by 16-ft. double-

• A view of the apron feeder which delivers stone from a truck receiving hopper to a 22- by 36-in. jaw crusher.

• The 4- by 16-ft. double-deck vibrating screen which is located above the surge bins.

deck Seco vibrating screen mounted over a 4-compartment steel bin. Half the bin is located over a roadway for loading trucks, while the remaining half functions as a surge bin from which subsequent crushing and screening operations are supplied.

Oversize stone, about three-fourths of the total feed, is delivered from the surge bin to a 24-in. inclined belt conveyor by means of an Austin-Western reciprocating feeder. The conveyor discharges into a Symons 4-ft. shorthead cone crusher, from which another run of 24-in. belt conveyor takes the stone to the final sizing screens. These screens (a 4- by 16-ft. double-deck Seco, and a 2- by 6-ft. single-deck unit of the same make) are mounted above a six-compartment 350-ton steel bin in which the various sizes of road stone, concrete aggregate, and topping material are stored. The bins straddle two truck roadways, and each compartment is equipped with two manually-operated gates through which the materials may be withdrawn. In the coarse sizes the chief demand is for minus 1¼-in. (No. 5's) and for minus ¾-in. (No. 9's).

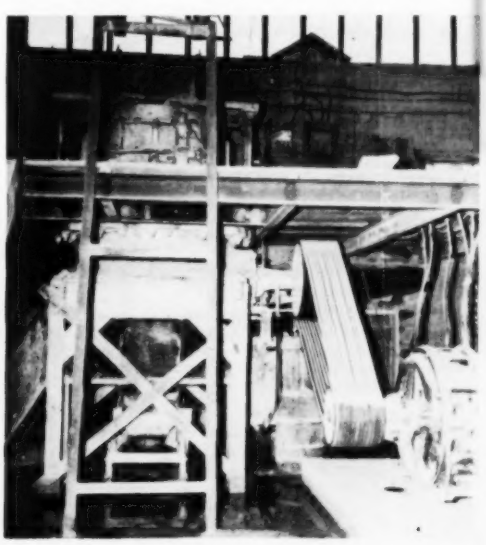
Housed in the same building with the cone crusher, but operated in an entirely independent circuit, is a 36- by 36-in. Stedman Type A impact crusher used for the production of agricultural limestone. This circuit is so arranged that it may be supplied from the surge bin or from a truck dumping ramp located just below the surge bin. In either case, a reciprocating feeder delivers the material onto a 16-in. inclined belt conveyor which discharges into the impact crusher. In practice this unit is fed almost entirely from the truck ramp, using material from the bins if the rest of the plant is operating, or from stockpiles when the other crushing units are idle.

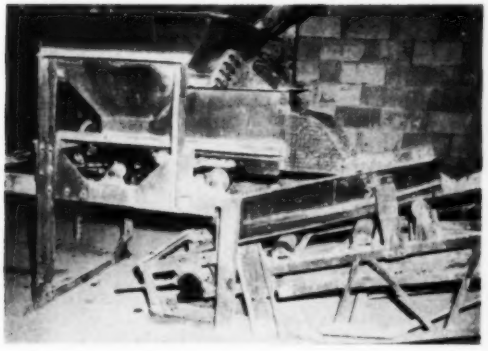
The Stedman crusher discharges onto an 18-in. inclined belt conveyor which takes the material to a four-compartment 100-ton lime bin located outside the building. The small quantity of oversize is separated by means of a 3- by 8-ft. single-deck Seco screen and returned by truck to the feed end of the circuit.

(*Continued on page* 119)

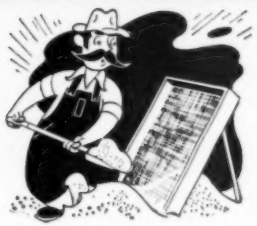
• Right: Secondary crushing is done with this 4-ft. shorthead cone.

• Below: Reciprocating feeders under the surge bins place the stone on inclined belt conveyors, which in turn feed other crushing units in the plant.





Screenings



by William M. Avery

BECAUSE your favorite journal tries unceasingly to keep abreast of new techniques in the magazine publishing field, we've just finished reading the prospectus of a newcomer called *Gentry* which made its bow last month, trying in our muddled way to corral a nugget or two that might apply to our own modest operations. We wish *Gentry* all the success in the world, but we hope the technique its publishers have evolved will never infect the trade journal field. A few direct quotations will serve to indicate what we mean.

"It is hard," states the prospectus, "to give a picture of *Gentry* for the reason that there is nothing in the world like it. For example, when *Gentry* prints a story on fishing, our technique calls for the swatching of an actual trout fly in the book. Or perhaps we talk about smoking; in this case it is quite natural for *Gentry* to enclose a tobacco leaf to illustrate a point which is being made in the article. When *Gentry* illustrates a new coat, an actual swatch of the fabric will be tipped alongside the photo to make it come to life."

At the moment we're far from convinced that it is "quite natural" for *any* publication to cavort in this fashion, and we take a particularly dim view of the *Gentry* school of journalism so far as our own endeavors are concerned. Conceivably an element of excitement would be injected into the perusal of PIT AND QUARRY if (for example) the reader never knew at what moment he might turn a page and have his head blown off by a swatch of dynamite which we had cunningly tipped in to illustrate an article on blasting, but we find it hard to believe that such capers would in the long run either enhance our reputation or enlarge our readership.

As a final indication that *Gentry* itself, as well as its entire approach to journalism, is not for us, the prospectus contains this clincher: "Do you know," it asks, "that for $2,000 or $3,000 it is possible to build your own private Finnish steam bath into your home? This article, complete with plans, costs, details, etc., will be interesting to

almost everybody." That tosses us clear to hell and gone out of the almost everybody classification.

Need a Lift?

THIS department has endeavored from time to time to keep its readers informed about what it regards as interesting developments in certain types of equipment. We have been accused, perhaps not entirely without justification, of a tendency toward over-specialization. Much as we deplore the somewhat lopsided picture that inevitably results from this practice, we hold firmly to the belief that some models are just naturally more intriguing than others.

Take lift trucks for example. Most people can take 'em or leave

'em, but we think our readers will agree that unit pictured here has—well, just a little something extra.

The French They Are . . .

A recent item in the Seattle *Times* imparts the fascinating intelligence that highway signs in French Morocco often consist of 10-ft. high concrete walls bearing the names of towns and distances, and calling attention to minor hazards of the road. Nothing like setting up a major hazard to call attention to a minor one, we always say.

Land Ho!

A RECENT issue of the Lawrence *Dragon* states that a man has been found who thinks 'tis a fine thing to have a cement mill in the neighborhood. Seems this Joe is a Penobscot Bay sailing enthusiast who finds the twin stacks of Lawrence's mill at Thomaston, Me., mighty handy for taking bearings. He claims that on a clear day the stacks are visible for 25 miles, and that the directional drift of the smoke ("vapor, that is," states the *Dragon* by way of clarification) tells him how the wind is and what he may expect in the immediate future. Wonder if it tells him where, how, and if he could latch onto a bag of cement right suddenly, if he should happen to want one?

Delayed-Action Economy

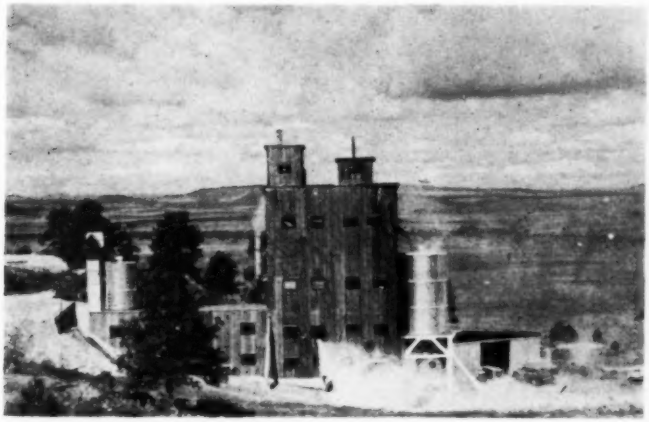
TWO noteworthy records were chalked up simultaneously the other day, one in the field of delayed-action blasting and the other under the heading of "economy from an unexpected quarter," when the Tennessee Valley Authority reactivated a quarry near Bridgeport, Ala. For the first blast after the reopening T.V.A. utilized a row of holes it had drilled in 1932, just before the property was shut down.

We don't suppose there's anything downright illegal about a government agency economizing in this fashion, but we think T.V.A. should watch its step. The lads in Washington have very little patience with that sort of nonsense.

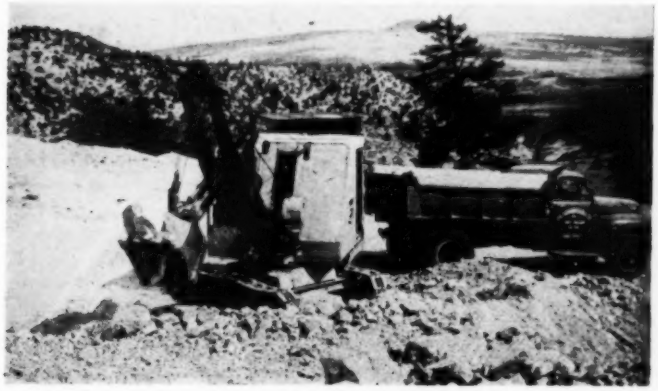
Schundler Mining Perlite From 8,900-Ft. High Bed In New Mexico Mountains

SINCE the F. E. Schundler & Co., Inc., of Joliet, Illinois, and Long Island City, New York, has been processing vermiculite aggregates for 20 years, it was natural for the company to recognize the attributes of perlite for certain aggregate uses. For several years Mr. Schundler personally examined scores of perlite deposits throughout the Western states. Samples ranging from 100-lb. lots to carloads were tested. When samples from the No Agua Mountains of New Mexico were received in the Schundler laboratory at Joliet, it was immediately obvious that the search had ended. Several test carloads of material were processed through the Joliet plant, and this ore proved to be far superior to all the others examined and tested.

Upon expansion the No Agua material was found to be tough and resilient. Two thousand acres of claims were surveyed; and when the extreme uniformity of the ore was established, work began on the construction of a complete and modern crushing mill. Carl Schulz, Joliet plant superintendent, designed the plant layout and moved to Antonito, Colorado, to supervise the erection and installation of the machinery.



• The Schundler plant in the No Agua Mountains of New Mexico was built on solid perlite ore.



• High in the mountains the perlite ore is loaded into trucks with a ½-cu. yd. shovel.

• M. B. Mickelsen, plant superintendent at the No Agua operation, who is in charge of mining, milling, and shipping. Mr. Mickelsen located the perlite deposit.

Resting at the foot of the mountains, the plant has its foundations imbedded in solid perlite ore. The plant is rated at a 25-ton per hour capacity. Carload shipments of screened and graded ore are made from Antonito, Colorado, over the Denver and Rio Grande Western railroad.

The No Agua Mountains rise out of the San Luis Valley plateau, from the top of which there is a commanding view of the surrounding country for miles in every direction. Mining of Schundler perlite is done at the top of these mountains at an 8,900-ft. elevation by conventional benching methods. A Gardner-Denver 300-cu. ft. compressor is used for drilling. The crude perlite rock, upon being loosened by black powder charges, is loaded by a Bay City ½-cu. yd power shovel. The material is hauled down the winding road to the plant stockpile in 8-cu. yd Ford F-7 trucks with Anthony dump bodies.

A D-7 Caterpillar "Tractor-Dozer" is used to keep the mining operation clean for stripping and for general road work. An International tractor with a Hough front-end loader is kept at the plant for similar activity.

At the mill the crude perlite ore is dumped through a grizzly into a Telsmith 14- by 24-in. jaw crusher, powered by a 25-hp. motor. The crushed ore is then conveyed by a 12-in. bucket belt elevator to a 9- by 16-ft. Butler bin, from which it goes by steel apron feeder to a dryer. This dryer is 66 in. in diameter by 40 ft. long, single shell, powered by a 30-hp. motor. No. 2 fuel oil is used in a Hauck 783 oil burner with 7½-hp., 20-oz. blower. Even in this normally dry country, perlite has some surface moisture,

and if this is removed, more efficient crushing and gradation can be accomplished. Moisture-laden air is removed from the dryer through a 6-ft. diameter cyclone with a 10-hp. exhaust fan.

From the end of the dryer the ore is lifted by a 14-in. bucket belt elevator to three Tyler Hum-mer screens. These are 4- by 10-ft. double-deck, completely enclosed. The coarse ore from these screens is taken through a Symons cone shorthead 3-ft. crusher powered by a 75-hp. motor.

Since excessive fines are detrimental to a quality ore, a 14-ft. Raymond mechanical air separator is used to take off the fine material. This separator is powered by a 40-hp. motor. The fines are removed to the dump by an 18-in. belt conveyor, and the finished product goes by a 10-in. bucket elevator to additional Butler bins holding 130 tons each. All speed reducers on the elevators are Dodge torque arm units. The bins are the "truck-drive-under" type and the product is hauled to the railroad in covered "Trailmobile" semi-trailers attached to Ford F-8 tractors. This unique plant layout was designed to obtain maximum flexibility with the least wear and maintenance. Several product sizes are produced with only minor adjustments.

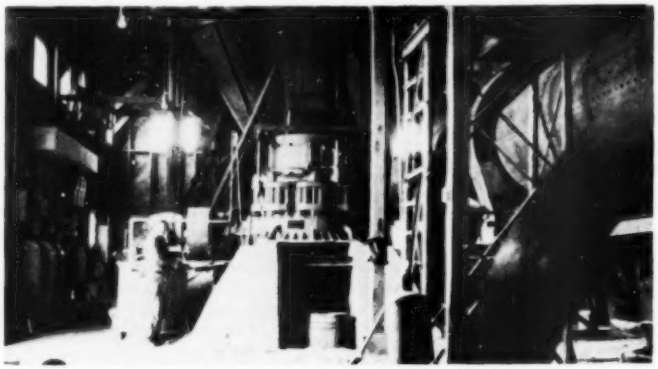
The main building at No Agua measures 35 by 104 ft., with a 57-ft. clearance at the high end in which are housed the Tyler screens. A separate powerhouse also contains the office, the shop, and a control laboratory.

All power for the plant is supplied by a 3-phase, 440-volt, 60-cycle, 275-kw. D-397 Caterpillar diesel-electric generator. The diesel engine is rated at 400 steady hp. at 8,000 ft. elevation. It is a V-12, 1,200 r.p.m. engine with blower. The 37,250-gal. fuel tank, with pump feed is located a safe distance from the main buildings.

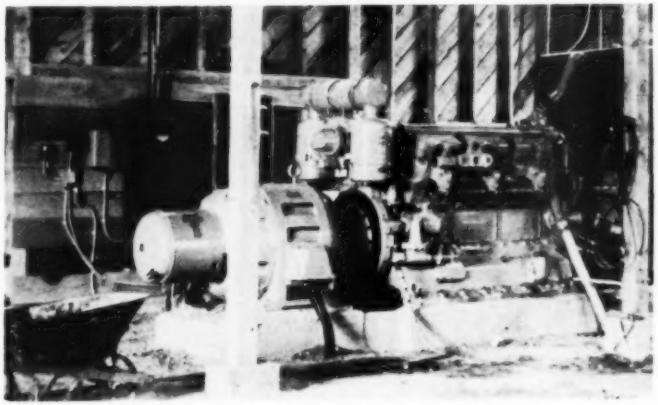
At the shipping point, outside Antonito, at the end of the standard gauge, storage space for 180 tons of finished material has been provided with a 32-ft. high bin. A 14-in. bucket elevator and an 18-in. conveyor feed the bin and load products into railway boxcars. A 4-cycle Wisconsin 20-hp. engine operates the elevator and conveyor. The 15- by 28-ft. building adjacent was constructed for storing shipping supplies.

A complete repair shop installed in the powerhouse includes a gasoline-electric Hobart arc welder of 300-amp. capacity. Lights for the plant, when the diesel is not operating, are supplied by a Wisconsin gasoline-engine-driven 6 kw. light plant. A Ford F-4 stake truck is used to haul supplies from Antonito to the No Agua plant.

The company is arranging with the forest service to have a joint

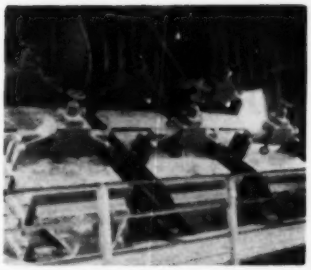


• The cone crusher (center) and the 6-ft. diameter cyclone used to dry the perlite.



• Power for all operations is supplied by a 440-volt, 275-kw. diesel generator.

• Graded perlite ore is delivered to the storage bins at the D. & R. G. W. railhead.



• The double-deck fully-enclosed 4- by 10-ft. screens.

• Left: Crude perlite rock is hauled to the plant stockpile in 8-cu. yd. trucks.

phone connection. This will also help with the volunteer work of reporting forest fires to the forest service.

This entire plant has been engineered by Mr. Schulz, general superintendent at Joliet, who has been living at Antonito for the last seven months while the plant was under construction.

M. B. Mickelsen will be superintendent of the No Agua operation and will be in full charge of mining, milling, and shipping. Mr. Mickelsen originally located the perlite deposit and has had years of experience in mining activity. In 1950 he was a milling operator for the Amarillo Gold Mining Company. He also took part in the discovery of the pumice mine on the San Antone Mountain in Northern Taos County, Mexico.

Expanded perlite from this mine will be sold from the Schundler plants at Joliet and Long Island City, N. Y. The Coralux Perlite Corporation of New Jersey at Metuchen, N. J., and Midwest Perlite Products, Inc., West DesMoines, Iowa, will also expand this product and merchandise it under the Schundler trade name of Coralux. Several other expanders will be established as licensees to expand and merchandise Coralux, to make this quality material generally available throughout the country. Expanded perlite is principally used as a lightweight aggregate to replace sand in gypsum and cement plasters. Plasters of this type have a 4-hour fire test at the Underwriters' Laboratory in Chicago.

The popularity of Coralux as a lightweight aggregate in insulating concrete is growing steadily. The advantages especially cited by contractors, architects, and designers of buildings, are its fireproof and insulating characteristics and its lightness. By using Coralux aggregates, a savings of as much as 80 percent in dead load can be effected. This will be due principally to a saving in steel, a matter of utmost importance during a period in which there is a steel shortage.

At DeKalb, Ill., the Schundler company manufactures acoustical tile and a high-temperature block insulation in which No Agua perlite is one of the principal ingredients. It is also used as an additive to certain types of paint and lacquers, in foundry sands, and as a filtration aid.

The Schundler laboratory, under the direction of P. S. Denning, technical director, is studying the peculiar characteristics of perlite and applying these characteristics to a growing usage of the product. Several products are nearing the production stage, as a result of laboratory development. All of these will be available to Coralux licensees.

Independent Circuit

(*From page* 115)

Out of a total daily production of some 500 tons of agstone, the impact crusher accounts for about 400 tons, the remainder being produced by the cone crusher. The company does not operate spreader trucks, its entire output of agricultural limestone being sold to a separate organization which handles farm sales and distribution.

Scott County Stone Co. is affiliated with Radcliff & Berry, Inc., of Hardinsburg, Ind. The parent organization operates a similar plant for the production of crushed limestone at Orleans, Ind., which is about 40 miles due west of Scottsburg. The Scottsburg property, which had in the past been the scene of several portable plant operations, was taken over by Radcliff & Berry in 1937, and the present plant was placed in operation in 1948. Officials of the company are Albert Berry, president, and Max Radcliff, secretary-treasurer.

Sicilian Sulphur Operations Undergoing Modernization

The Foreign Commerce Weekly states that several Sicilian sulphur mining companies have begun modernization proceedings. Installation of a flotation plant at the Cozzo Disi mines near Campofranco is one such forward step. Another installation is to be added at the Valsalso mine.

It was indicated that two of the most urgent problems facing the sulphur industry involve expediting the hauling of the material to the surface and providing for adequate recovery facilities to handle the resulting increased supply.

2-Day Fete Marks Opening Of National Gypsum's Plant

During a two-day celebration marking the completion of the National Gypsum Company's new plant at Medicine Lodge, Kan., on October 9 and 10 the firm held open house for the community. More than 4,000 persons toured the plant, among them 1,000 dealers, contractors, and architects from a five-state area. A barbecue and banquet highlighted the affair.

Housed in the 800-ft. building is a specially designed wallboard machine 500 ft. long which turns out enough board for 3,000 average-size houses each month. Gypsum for the product is obtained from a deposit near the plant, said to be "the purest gypsum in the world".

The Freeport Sulphur Company of New York reports that U. S. production of brimstone sulphur, which totaled 5,350,000 long tons in 1950, is expected to increase to 6,555,000 tons by the end of 1953, due to the development of new deposits and the expansion of present facilities.

An Examination of the Thermal Efficiency of the Rotary Cement Kiln

Proposals for Improvement

Published in Revue des Materiaux, October-December, 1949; translated and reviewed by B. M. Pearson, Hassocks, England.

By M. J. M. JASPERS

PART II—Continued

Zone of Heating by Gas Alone

After having considered the transmission of heat in the combustion zone characterized by the radiation of the gas and of the incandescent carbon towards the kiln walls, the material and the cold zone, let us now consider the zone in which the transmission is made solely by the gas towards the kiln wall and the material. Here again, there will be considered the heat ceded by the gas and the heat absorbed by the material.

The source of heat is the gas here, free from the particles of incandescent carbon, which have been burned away. The heat is transmitted by radiation and by convection, to the material and to the kiln lining.

It is important in the first place, to know the relative proportion of energy transmitted by radiation and by convection. The transmission of the heat from the gas to the kiln walls and to the material, can be represented by the following equation:

$$Q_G = Q_{RGP} + Q_{RGM} + Q_{CGP} + Q_{CGM}$$

Gygi has calculated the transmission for the section of a cement kiln considered in the zone of the preheating of the dry material, before decarbonation, where:

$t_{Gas} = 1,218°$ C.
$t_{Wall} = 720°$ C. and
$t_{Material} = 500°$ C.

Q_{RGP} =	161,000 K. cal./metre/hr.	57%
Q_{RGM} =	98,300 K. cal./metre/hr.	34.5%
Q_{CGP} =	14,300 K. cal./metre/hr.	5.0%
Q_{CGM} =	10,300 K. cal./metre/hr.	3.5%
Q_G calculated =	283,900 K. cal./metre/hr.	100.0%
Q_G experimental =	286,000 K. cal./metre/hr.	

The first remark which needs to be made is that, in the preheating zone, the heat transmission is still made, for the greater part, by radiation. It results from this that, contrary to current practice, it is not necessary to diminish the diameter of the furnace, since the radiation by the gas is favorably influenced by the thickness of the gaseous coating. On the other hand, the radiation is similarly favored by the enrichment in CO_2 resulting from the decarbonation of raw material during preheating.

As regards the difference between the temperature of the gas on the one hand, and the wall and the material on the other hand, which constitute the other factor determining the heat transmission by radiation, it is above all a function of the thermal exchanges realized in the combustion zone. Now, it is this zone which is a deciding factor for the efficiency of the kiln, from the point of view of the amount of fuel used and its economical consumption, since it is in this zone, above all, that it is necessary to produce the maximum entropy at the highest thermal potential, and to pump this thermal potential, as much as possible, into the material, to decarbonate it and to clinkerize it.

On leaving the combustion zone it is sufficient that there should be a disposable thermal entropy in the gas at a sufficient thermal potential to prepare the material, in other words, to dry and to preheat it and eventually accomplish the decarbonation.

The material, at the entry to the decarbonation zone, should be heated to about 804° C., temperature, at which the decarbonation commences.

It is necessary in the first place, that at the location of this temperature of the material, the gas should contain, per kg. of clinker, sufficient heat calories so that there is enough thermal energy available to evaporate the water and preheat the slurry corresponding to 1 kg. of clinker.

If there is not enough, the yield of the kiln will diminish, since it is necessary to utilize a certain entropy at a higher thermal potential to prepare the material in place of utilizing it for the clinkerization and the decarbonation: the surplus will quit the kiln with the waste gases.

The number of calories necessary per kg. of clinker to evaporate the water and to heat the material to 804° C. can easily be calculated.

The composition of the slurry and of the clinker considered is the following:

	Dry slurry	Clinker
$\%SiO_2$	13.50	22.00
Al_2O_3	4.00	6.00
Fe_2O_3	2.00	3.50
CaO	43.50	66.00
MgO	1.50	2.00
Alkalies	....	0.50
Loss on Ingition	35.50	....
$CaCo_3$	78.00	....

Per kg. of clinker, there is 1.54 kg. of dry material; it will be assumed that the materials enter the kiln at 20° C.

Then: the dehydration of the clay kaolin absorbs: 33.90 K. cal./kg. of clinker

The decarbonation of the $MgCO_3$ absorbs: 7.80 K. cal./kg. of clinker

The heating absorbs:

152 grms. clay from 20° to 450° C.:
18.5 K. cal./kg. of dry material × 1.54 = 28.50 K. cal./kg. of clinker

130 grms. of meta-kaolin from 450° to 800° C.:
12.7 K. cal./kg. of material dry × 1.54 = 19.50 K. cal./kg. of clinker

64 grms. SiO_2 from 20° to 800° C.:
13.0 K. cal./kg. of dry material × 1.54 = 20.00 K. cal./kg. of clinker

780 grms. of $CaCO_3$ from 20° to 800° C.:
183.0 K. cal./kg. of dry material × 1.54 = 288.00 K. cal./kg. of clinker

31 grms. $MgCO_3$ from 20° to 600° C.:

3.6 K. cal./kg. of dry material × 1.54 =	5.50 K. cal./kg. of clinker
15 grms. of MgO from 600° to 800° C.: 0.8 K. cal./kg. of dry material × 1.54 =	1.20 K. cal./kg. of clinker
	404.40 K. cal./kg. of clinker

There are to be added to this the calories necessary to evaporate the water of the slurry: 40%, the waste gas quitting the kiln at 200° C.

Sensible heat of liquid water:

20° → 100° C.: 1.02 kg. × 1 × 80° C. =	82.50 K. cal./kg. of clinker
Evaporation at 100° C.: 1.02 kg. × 538° C. =	550.00 K. cal./kg. of clinker
Sensible heat 100° to 200° C.: 1.02 × 0.465 × 100° C. =	47.50 K. cal./kg. of clinker
	680.00 K. cal./kg. of clinker
Total	1,084.40 K. cal./kg. of clinker
Losses by external conduction: 40% of 314 K. cal./kg. of clinker	125.60 K. cal./kg. of clinker
	1,210.00 K. cal./kg. of clinker

This leads us to the result that, per kg. of clinker 1,210.4 or about 1,200 K. cal. B are required (B signifies a low thermal potential).

Let us now examine what is the quantity of available calories, per kg. of clinker, in the gas at 804° C. and let us suppose that the gas is cooled to 200° C. and per kg. of clinker.

Assuming a fuel consumption of 24.63% we have:

	Per kg. of coal	Per kg. of clinker
CO_2 :	1.46 Nm^3 × 24.63% =	0.361 Nm^3
N_2 :	7.10 Nm^3 × 24.63 =	1.75
O_2 :	0.17 Nm^3 × 24.63 =	0.04
H_2O :	0.45 Nm^3 × 24.63 =	0.11
	9.18 Nm^3	2.26 Nm^3

In the slurry there is 78% of $CaCO_3$ or 1.2 kg. of $CaCO_3$ per kg. of clinker, which is 0.53 kg. CO_2 : 1.99 = 0.265 Nm^3.

Then, per kg. of clinker:

CO_2 : 0.625 Nm^3 × 0.45 × 604° =	167 K. cal. B/kg. clinker.
N_2 : 1.720 × 0.32 × 604° =	330 K. cal. B/kg. clinker.
O_2 : 0.040 Nm^3 × 0.32 × 604° =	8 K. cal. B/kg. clinker.
H_2O : 0.110 × 0.38 × 604° =	25 K. cal. B/kg. clinker.
	530 K. cal. B/kg. clinker.

It can be remarked that, per kg. of clinker, 1,200 K. cal. B are necessary to preheat the material, to evaporate the water and to preheat this to 200° C., and to supply heat to cover the loss by external conduction. Now the products of combustion and of the decarbonation, while cooling down from 804° to 200° C., have only 530 K. cal. B/kg. of clinker to give up. There is accordingly lacking 680 K. cal. B/kg. of clinker, which must be replaced by the Cal. H originating from Q_{R1}.

It has been previously calculated above that there are, per kg. of coal, 2,538 K. cal. from Q_{R1}, or

2,538 × 24.63% = 625 K. cal. H/kg. of clinker of Q_{R1}.

This figure corresponds closely enough to 680 K. cal. B/kg. of clinker that are lacking in the waste gases when the temperature decreases from 804° down to 200° C.

From the above considerations we learn that the products of combustion, by decreasing in temperature from 804° C., (where the decarbonation commences) down to 200° C., (temperature of the exit point of the waste gases), will not have enough available cal. to evaporate the water, to heat the material and to supply heat to cover the heat losses by external conduction.

It has been confirmed that the cal. H of Q_{R1}, supply this heat. But in reality, the temperature of the waste gas, at the position where the decarbonation commences, is higher than 804° C. It attains, according to the measurements made by Gygi, 1,400° C.

Then the calories available from 1,400° to 200° C., are:

CO_2 : 0.620 Nm^3 × 1,200° × 0.470 =	350 K. cal./kg. of clinker
N_2 : 1.720 Nm^3 × 1,200° × 0.325 =	670 K. cal./kg. of clinker
O_2 : 0.040 Nm^3 × 1,200° × 0.325 =	16 K. cal./kg. of clinker
H_2O : 0.110 Nm^3 × 1,200° × 0.390 =	52 K. cal./kg. of clinker
	1,088 K. cal./kg. of clinker

This figure corresponds practically to the K. cal. B/kg. of clinker necessary (1,210 K. cal.) to evaporate the water, heat the material and to supply the heat losses by external conduction.

Evidently, this is made at the expense of:

1,088 — 530 = 558 K. cal. H.

produced by the waste gases at 1,400° C., when the material commences to decarbonate at 804° C. This figure is of the same order of magnitude as the 625 K. cal. H per kg. of clinker that it was found necessary to fall back on, above. It results similarly, from the above, that in the case considered, cal. H are required, mainly for the purpose of evaporating the water in the slurry.

In fact, if the material were dry, there would only be required:

404 K. cal./kg. of clinker to heat the material to 804° C.
125 K. cal./kg. of clinker to supply the heat losses by external conduction.

529 K. cal./kg. of clinker, corresponding exactly to the K. cal. available in the combustion gases, on cooling from 804° down to 200° C.

This seems to indicate that in the case considered, nothing will be gained by diminishing Q_{R1} unless one succeeds in diminishing the water in the slurry, a fact which again raises the importance of this problem from the point of view of the thermal efficiency of the kiln.

But this also again renders prominent the great interest and importance of reducing Q_{R1} in cement kilns operating on the dry process, whose thermal efficiency can, from this fact, be increased to a considerable extent.

In spite of all the above, the conclusion relative to the diminution of Q_{R1} remains decisive for a cement kiln operating by the wet process; the facts are that it is a question here of a kiln of 102 metres in length, consuming 24.63% of coal or 1,743 K. cal./kg. of clinker, the temperature of the waste gases being 200° C., and with a slurry containing 40% of H_2O. The problem of the decrease of Q_{R1} will regain all its importance as soon as one is dealing with a slurry containing less water.

It is evident, by virtue of the laws of heat transmis-

sion, that in the zone where the heating is accomplished by the gas, the transmission by convection and conductivity increases in proportion as the temperature of the waste gases decreases. But the transmission by radiation will remain important, up to the location where, normally, chains or other recuperators of calories are placed in the kiln.

As a consequence, the conclusions of Gygi, from the point of view of the design of the kiln was logical; this was to maintain the large diameter in the preheating zone.

As regards the kiln zone equipped with chains, the transmission is made by radiation and convection from the combustion gases to the chains, to the kiln wall and to the material and the gas is increased, thus favoring the material, in the zone where the slurry has become sufficiently plastic so as no longer to adhere to the chains when they leave the material.

At the entry to the kiln, where the slurry is still fluid, it covers and adheres to the chains, even when these leave the material. In this way the contact surface between the material and the gas is favored as well as heat transmission from the combustion gases to the material, by convection and radiation.

To the author's knowledge there are no available experimental facts permitting of the calculation of the heat transmission of the heat from the waste combustion gases to the kiln walls, to the chains and to the material.

In principle it can be said that the heat transmission by convection and conductivity gains in importance with respect to the transmission by radiation and that, from this fact, the velocity of the gas plays a greater role.

As a consequence there would be some opportunity of diminishing the diameter of the kiln in this zone, although actually a dense chainage with a reduced kiln section would not produce the same effect; this would serve to increase still more the contact surface. Then, for this section of the kiln, one arrives similarly at the general conclusion that it is desirable to maintain a large diameter and to equip the kiln with the highest possible density of chainage.

PART III THE MATERIAL TO BE FIRED, CONSIDERING THERMAL EFFICIENCY OF THE KILN

The thermal energy is transmitted from the emitting medii-gas, incandescent coal, wall; to the receptive material—wall and material. The quantity of calories transmitted depends, among other things, on the temperature difference between the emitting surface and the receiving medium.

It results from this that it is necessary to realize the maximum temperature of the emitter; this has been considered in the previous two sections.

But, from the thermal point of view, it is similarly desirable to realize the minimum clinkerization temperature of the material and the maximum speed of reaction.

In this case the number of calories necessary per kg. of clinker will be a minimum, and the productive capacity of the kiln, a maximum. This is, in other words, equivalent to saying that the thermal efficiency of the kiln will be a maximum. The problem is complicated by the fact that it is not sufficient to produce a clinker whose burning is effected at the minimum temperature, but that it is necessary, at the same time, to manufacture a clinker of the best quality. Consequently, this leads up to the fact that, from the thermal point of view, it is necessary to make concessions as regards the quality of the cement being manufactured.

Accordingly, for each case, one should then resolve in advance the quality of the clinker to be manufactured. The full solution of such a problem is outside the scope of this present thermal survey; it embodies in itself the whole of the chemistry and the physical chemistry of cement, as well as the problem of the relations between the chemical composition, the mineralogical constitution and the technological properties of the cement. This problem will be assumed as solved, in the sense that one has fixed on the value to be given to the various technical properties of the cement to be manufactured.

This being so, one can make the choice of the raw materials and determine the proportions for mixing. In the manufacturing procedure by the wet process it is a question, from the thermal point of view, of realizing the requisite fluidity of the slurry, to obtain its necessary transportability with the minimum of water. Various problems intervene here, such as: the flow of heterogeneous fluids (such as the slurry) through pipelines, with regard to the economical dimensions of the pipelines and of the power consumption for the handling; the fineness of the slurry as a function of the fluidity, and the fluidity of the slurry as a function of the physical nature of the raw materials.

To this is attached the whole problem of slurry fluidizing agents which has already been discussed previously, and which necessitates a profound study of clays and related materials.

The problem of the fluidization of the slurry with the minimum of water being assumed as resolved, it is then a question from the thermal viewpoint to realize the optimum conditions for clinkerization at the minimum temperature and at a maximum velocity.

The clinkerization follows in chronological order after the decarbonation. This operation achieves, under the influence of the thermal energy, the chemical transformation of the constituents of the mixture of the raw materials into the constituents of the cement. In other words, the transformation of the CaO originating from the $CaCO_3$ of the chalk, of the aluminum silicate of the clay, of the Fe_2O_3 and the free silica, is into C_3S, C_2S, C_3A and C_4AF (the minor elements are neglected here).

It is a question here of a heterogeneous system, constituted of several phases, of which one is a liquid. The reactions take place partially between solid phases, partially between solid and liquid phases.

The speed of the reaction between the solid phases is governed by the following equation[3]

$$V = A.e^{-\frac{q}{RT}}$$

A = constant, a function of the structure of the material (fineness, homogeneity of the mixture, etc.) but independent of the temperature.
R = Gas constant.
T = Absolute temperature.
q = energy of dislocation of the crystalline structure of the phase.

From the thermal point of view it is important that the velocity of the reaction should be a maximum. To this purpose it is necessary that q should be a minimum, or in other words, that the energy necessary to detach an atom from its neighbors in the crystalline structure to carry it to the energetic level of reactivity, should be a minimum.

This is the case, among others, when the body considered finds itself in the form of a solid solution, or at temperatures of allotropic transformation.

Nevertheless, up to the present time, there are not available sufficient experimental facts to be able to exterpolate from them into industrial applications.

Hedval's equation likewise brings into prominence the

[3](See Hedval: *Reaktionsfachigkeit Fester Stoffe*—Leipzig, 1938, Symposium 42.)

importance of the fineness of grinding, which is comprised within the scope of the coefficient A.

Methodical research, confirmed by industrial practice, has shown that, from the point of view of the velocity of the reaction, which implies the thermal point of view in other words, it is less necessary to grind the chalk finely, because its reactivity remains considerably high due to the porous structure of the CaO after decarbonation. The same holds good as regards the Al_2O_3 which enters into the liquid phase.

On the contrary, it is desirable to reduce the quartzitic silica to the greatest degree of fineness possible, because this participates above all in the reactions between solid phases, where the reaction surface plays an important role. To measure the influence of the fineness of the grinding on the speed of the reaction, burnings are generally made at a given temperature, during a determined period of time, and the free lime is determined. Nevertheless, to render research of this nature usable from the thermal point of view, it would be preferable to make the burning at a determined temperature, but during a variable period of time, necessary to obtain the same contents of free CaO in the different burning tests.

With this information one can then correlate the fineness of grinding with the duration of burning, this being utilizable in the calculations relative to thermal studies.

The same holds good if the burning temperature is caused to change, as a function of the fineness of grinding, the content of free CaO being maintained constant.

Accepting that the reactions between the solid and liquid phases are effected more rapidly than the reactions between the solid phases, it is accordingly necessary to favor the formation of the liquid phase. Or in other words, that it is necessary—always from the thermal viewpoint,—to push the formation of the liquid phase to a maximum, and at the minimum temperature.

Generally, the liquid phase in the commercial clinkers appears around 1,285° to 1,300° C. Its proportion is calculated by the formula:

Percentage liquid phase =

$2.95\%\ Al_2O_3 + 2.2\%\ Fe_2O_3 + \%\ (MgO + \text{alkali})$

The study of the quaternary system C — S — A — F shows that the mixtures of these constituents, in the proportions generally encountered in portland cement, give at the condition of equilibrium $C_3S - C_2S - C_3A - C_4AF$. The liquid phase appears always at 1,338° C.

The composition of the liquid phase is as follows:

In oxides		In constituent potentials	
%CaO	54.8	$\%C_3S$	1.4
SiO_2	6.0	C_2S	16.2
Al_2O_3	22.7	C_3A	32.2
Fe_2O_3	16.5	C_4AF	50.2

Ratio $C_4AF : C_3A = 1.56 : 1$.

The addition of other substances lowers the temperature of the appearance of the liquid phase, as is shown by the following table[4].

Constituents	Temperature of formation of the liquid phase
C — S — A — F	1,338° C.
C — S — A — F — N (N = Na_2O)	1,315° C.
C — S — A — F — M (M = MgO)	1,300° C.
C — S — A — F — N — M	1,280° C.

If one wishes to lower still more the temperature of the formation of the liquid phase, one can have recourse to certain substances such as CaF_2, $MgSiF_4$, B_2O_3, Na_3AlF_6, the study of which must be made in each specific case.

From the thermal point of view it is not sufficient to achieve the minimum temperature for the formation of the liquid phase; it is necessary in addition to achieve the maximum quantity of the liquid phase at this minimum temperature, because the velocity of the reaction is a function of the quantity of the liquid phase.

According to Bogue and Taylor[5] in the system C — S — A — F of composition similar to that of portland cement, there is formed the maximum of liquid phase when the ratio $C_4AF : C_3A$ is situated between 1.5 and 2.0.

Finally, it is important to achieve a liquid phase with a minimum viscosity[6] because this accelerates the combination of the lime of the silicates. In this regard, the use of ferruginous materials appears to be favorable.

Up to the present, we have seen that the addition of certain substances to the system C — S — A, in mixtures similar to that of portland cement, diminishes the temperature of the appearance of the liquid phase and can increase the quantity of this; from this fact, the speed of the reaction is accelerated. Nevertheless, the addition of these substances can have a second effect. It can modify the relative proportion of the constituents formed at the state of equilibrium of the system (C_3S, C_2S, C_4AF, C_3A) and, by the same fact, accelerate or retard the velocity of the reaction, by virtue of the mass law. Thus, for example, the determining reaction of the clinkerization is the combination $C_2S + C = C_3S$, which will operate relatively quickly as long as there is much C_2S in the presence of little C.

It results from this that the influence of the addition of other substances to the system C — S — A, on the speed of the reactions, is the resultant of two tendencies, of which one or the other can be dominant, according to the case, and will modify the result.

CONCLUSIONS

This rapid survey, as is often the case, has imposed many problems which have not been actually resolved. Nevertheless, it has resulted from the above that the study of the thermo-dynamics of the interior of the kiln, as well as the notion developed of entropy at an elevated thermal potential and a low thermal potential, constitute a contribution full of promise to the problem of the thermal efficiency of the rotary cement kiln, all the more so because of the important influence of the fuel cost on the production price of the cement.

On the other hand, in the same way as the problem of the liaison between the chemical composition, the mineralogical constitution and the technical properties of the cement has realized great progress during the course of the last decades, that of the liaison between the chemical composition, the mineralogical constitution of the cement and the thermal efficiency of the rotary kiln, has been outlined. In spite of the enormous experimental material of scientific research relative to the chemistry and physicochemistry of cement, we are still in the age of mythology as regards scientific research of the function : mineralogical constitution/thermal energy.

What is lacking is a sufficient mass of measured results, of calculation and of experimental interpretation of the thermal order applied to the rotary kiln, on the one hand, and on the other hand in relation with the chemical and physical constitution of the raw materials to transform into cement.

[4] (After W. C. Hansen and R. H. Bogue, Ind. Eng. Chem. 19, 1260 (1937); P.C.A.F. Paper 10. Also, W. C. Hansen, J. Res. N.B.S. 4, 55 (1930); R.P., 132; P.C.A.F., paper 22.)

[5] (R. H. Bogue and W. C. Taylor: Res. Reports, P.C.A.F., Dec. 1932.)

[6] (V. Berg: *Zur Kenntniss der Vorgaenge beim Brennen von Portland Zement—Radex Rundschau*, February, 1949.)

Kalamazoo Sand & Gravel Concern Speeds Output with New Dredge

SEVERAL unique features of design engineered into a new gravel pumping dredge recently put into operation by the Consumers Sand and Gravel Company of Kalamazoo, Mich., have greatly speeded up the company's production of gravel, road stone, and plastering sand. These features are said to have contributed to a more even flow of material, reduced hazards to driving machinery, and greater freedom from shutdowns than is usually experienced in such a pumping operation.

Instead of the two or three engines or a combination of engines and electric motors quite often used in such equipment, this dredge is driven by a single power plant. Main pump, priming pumps, stone ladder, and winches are all driven through an ingenious system of power take-offs by one General Motors 6-110 diesel engine. The dredge is, therefore, ready to operate when a single button is pressed.

The clutch mechanism of the 8-in. Hubscher stone ladder is engineered so that it can be reversed and also so that "slippage" occurs when a heavy obstruction such as an embedded log or a boulder is encountered. It is also useful in the event that the ladder is buried by a cave in. In such cases the ladder is automatically rendered inoperative until the operator, by throwing it into reverse, can pull it away from the obstruction. This feature prevents damage to ladder parts and driving machinery, thereby eliminating costly downtime periods. It also enables the single operator required on the dredge to perform maintenance and other duties; he need not stand guard at the controls at all times.

The ladder is equipped with claws of extra heavy construction and is driven with sufficient power to break through hard pan and clay formations to expose lower layers of usable material. Rocks too large to negotiate the nozzle and pipe successfully are, of course, lifted and deposited well to the rear. When the pumped material is deposited on shore to drain, it has already been subjected to a pre-washing, due to the vigorous tumbling it receives in the 8-in. Hetherington-Berner pump.

The dredge is 100 ft. long by 16 ft. wide and is built of 5/16-in. plate. It has nine water-tight bulkheads and will remain afloat with any two of them flooded. Carefully designed flotation assures perfect "trim" of the dredge, regardless of the position of the ladder. The suction pipe is 75 ft. long and will dredge to a depth of 50 ft. without additional pipe. All movable parts are easily accessible for servicing.

The dredge was built by The Earle Equipment Company, Detroit Diesel Engine Division distributors in Detroit, Mich. Jack Deakins, sales engineer of the Earle Company, was the designer.

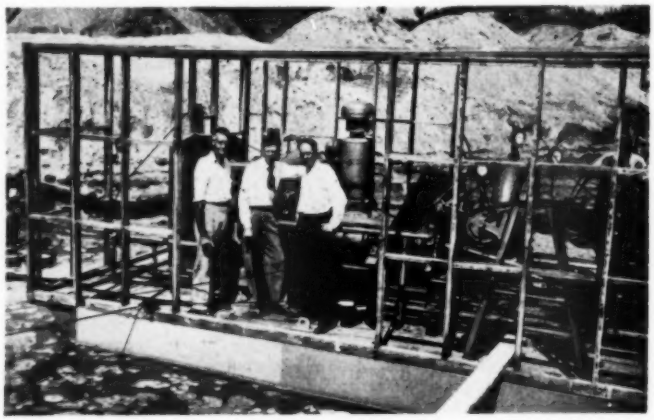
General Electric Exhibit Train Ends 28,000-Mile Tour

The world's largest traveling showcase of electric products—General Electric Company's now-famous "More Power to America Special" exhibit train—has ended a 28,000-mile run.

Workmen at the company's Schenectady (N.Y.) works recently completed the six-week task of dismantling the 10-car silver streamliner and its 2,001 exhibits of industrial products and techniques for the production and application of electric power.

During the 14-month tour the train was exhibited in 166 cities from coast to coast and played host to a select audience of nearly 200,000 industrialists and business and civic leaders.

The tour took the latest G-E techniques to the production front.



• Aboard the Consumers Sand and Gravel Company's new dredge near Kalamazoo, Mich., are Adrian Klepper, partner of the firm; Jack Deakins, Earle Equipment Company; and Richard H. Butcher, general manager for Consumers.

• An overall view of the firm's operation, showing the newly-installed pumping dredge which changed the company's gravel-producing method from dry to wet. Note the new 150-ft. concrete tunnel (right background) housing the conveyors which run to the screening and crushing plant on the hill.

personal mention

ROBERT M. KOCH, executive secretary of the National Agricultural Limestone Institute, Inc., Washington, D. C., has been appointed by Secretary of Agriculture Brannan to the National Grasslands Advisory Committee. This group is exploring ways and means in which organizations such as N.A.L.I. can assist in promoting the grasslands program. Another current project of the committee is the International Grasslands Congress, scheduled to be held in the United States some time in 1952.

J. R. BOYD, administrative director of the National Crushed Stone Association, Washington, D.C., has been named a member of the Trade Association Department Committee of the U.S. Chamber of Commerce. It is the aim of the committee to promote cooperation between the nation's trade associations and the government in the defense mobilization program, and also to further the contribution which these associations make to general business progress and development.

RUSSELL G. HAWORTH has become resident manager for the Potash Company of America, Carlsbad, N. M., succeeding Parker S. Dunn, who resigned to take a position with American Potash & Chemical Corporation, Trona, Calif.

STANLEY D. SAJKOWSKY, who was formerly assistant superintendent of the Pacific Portland Cement Company's plant at Redwood City, Calif., was recently made manager of the firm's southern Oregon operations. His headquarters will be at Gold Hill.

Mr. Sajkowsky replaces C. W. Martin, who served as superintendent of the Gold Hill plant for more than 25 years. Mr. Martin will continue at the plant as consultant.

M. A. KOFFMAN, vice-president of the Southwestern Portland Cement Company of Los Angeles, Calif., served as general chairman at the fifth annual health and safety institute sponsored by the Los Angeles Chamber of Commerce at its fall business institute.

The appointments of two section managers in the engineering department of Monsanto Chemical Company's Organic Chemicals Division at St. Louis were announced recently.

C. C. RICHIUSA of Nitro, W. Va., was named process manager, and J. E. O'KEEFE of St. Louis was named construction manager. Both appointments were effective October 1.

Mr. Richiusa, who joined Monsanto in 1935 at Nitro, has been assistant plant engineer and since 1942 has been in charge of all design work there.

Mr. O'Keefe, who has been project superintendent at the company's William G. Krummrich plant at Monsanto, Ill., joined the company in 1939.

Also announced at this time was the appointment of F. EDWIN WISELY of St. Louis as design manager in the firm's engineering department.

Mr. Wisely, who has been supervisor of engineering design for the company's John F. Queeny plant, assumed his new position on October 1. He joined Monsanto in 1946 as a design engineer at the Queeny plant.

JULIEN O. HEPPES has been appointed general manager of the Azrock Products Division of the Uvalde Rock Asphalt Company, San Antonio, Tex.

Ideal Cement Company executives have announced the appointment of JOHN L. GILLILAND JR., as general chemist. Mr. Gilliland was formerly with the Bureau of Reclamation, where as head of the chemical and cement laboratory for the last ten years he has had considerable experience in all phases of analysis and testing of portland cement and concrete. Mr. Gilliland will make his headquarters at Fort Collins, Colo.

obituaries

JOHN CLIFFORD EVANS, chief chemist for the Nazareth Cement Company until a year ago, when he retired because of illness, died in an Allentown, Pa., hospital on September 16.

Mr. Evans had been with Nazareth for 23 years. Previously he had worked for about 10 years as assistant chemist at the Martin's Creek, Pa., plant of the Alpha Portland Cement Company.

He was a graduate of the University of Pennsylvania and received his doctorate in chemical engineering from his alma mater in 1942. In his earlier years he did technical work for the United States Bureau of Standards in Washington. He also was employed as a chemist with the Hercules Powder Company and Hugh L. Cooper and Company during the construction of the Wilson Dam in Florence, Ala. Mr. Evans served for many years as a member of the technical problems committee of the Portland Cement Association. His participation in national organizations included membership in the American Society for Testing Materials, the American Concrete Institute, the American Chemical Society, and the American Society of Chemical Engineers.

GEORGE HOKANSON, 63, an employee of the Hallett Construction Company of Crosby, Minn., was suffocated when he was buried in a sand slide near Mankato, Minn., on September 17. Sand from a pile 30 ft. high fell on the victim and covered him.

FRANK WARREN BROWN, a retired employee of the Lawrence Portland Cement Company, died last summer of injuries sustained when he fell while repairing the roof of his home. The accident occurred in Thomaston, Me. Mr. Brown, who was 79 years old, had retired from his position at Lawrence last April after ten years with the cement concern.

ERIC W. RYBERG, one of the founders and the former president of the Utah Sand and Gravel Products Corporation, Salt Lake City, Utah, died on September 30.

GEORGE WILLIS, an employee of the Walters Sand Company, Manhattan, Kan., was drowned on Sepember 8 when he fell into the Blue River from a sand-dredging barge. He was 27 years old.

CHARLES NATHAN BECKER, who was associated with the Southern Phosphate Company as assistant manager and then as manager from 1923 to 1946, died last summer in a Tampa, Fla., hospital. He had been ill for several months. For the last five years he had been associated with J. W. Booream in the R. H. Clark Equipment Company. Mr. Becker was manager and vice-president. He was 56 years old.

WILLIAM M. TORRENCE, 74, owner of the Muncie Washed Sand and Gravel Company of Muncie, Ind., died recently after an extended illness.

new machinery and supplies

PIT AND QUARRY

● Bag Machine

Of interest to cement plants is the announcement that an imported, improved type of two-unit bag-making machine is on the market, which is designed to produce multi-wall paper cement bags, two to six walls, in a variety of sizes, either valve or open-mouth types.

Manufactured by the German firm of Windmoeller & Hoelscher, bag-machine manufacturers for 80 years, these bag-making machines incorporate many novel features. Marked economy of operation is claimed, and either stepped-up or controlled rates of production are cited.

One of the advantages claimed for these machines is better moisture-resistant qualities due to an exclusive W. & H. feature for pasting the bottoms. This new process eliminates perforations, which are unavoidable with sewn-end bags. The new type of closure is made automatically and is said to step up production by more than 25 percent.

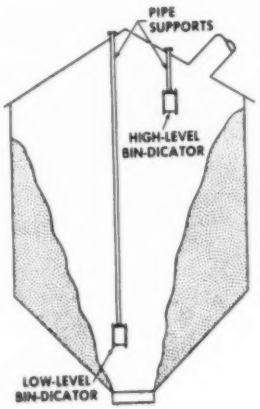
Other features cited include a built-in crane for the handling of paper rolls. This device provides an added safety factor and makes the change of heavy rolls an easily-controlled matter, saving both time and labor. A semi-automatic flying splice permits inserting new paper rolls without stopping the tuber.

Precision workmanship and perfectly balanced rollers, running in ball bearings, enable them to run at all speeds with the minimum of friction and vibration. One unit comprises the tuber and the second unit is the bottomer. The tuber is available with a W. & H. aniline printer, with from one to four colors.

H. H. Heinrich Company, N. Y., is the exclusive agent for the Western Hemisphere and is handling all inquiries, service requirements, etc.

● Bin Level Indicator

A bin level indicator to be mounted in the center of the bin or any other location that is best for securing dependable results is the Model CS "Bin-Dicator" produced by the Bin-Dicator Company, 13946 Kercheval, Detroit 15, Mich.



This model is designed for suspended installation from a pipe of any size up to 2 in. in diameter and permits placing the indicator at any place where the flow in the bin is greatest. Bin wall mounting, which proves unreliable for materials that pack and build up along the bin walls, is avoided. The supporting pipe also serves as a conduit for the electrical wiring, and the method of fastening permits raising or lowering of the indicator as needed, or complete removal for inspection. High or low level indicators may be obtained in this model.

● Elevator Bucket

The Calumet elevator cup is an all-welded unit of heavy-gauge steel, built so that the surface is entirely smooth on all sides, and designed to operate at

all permissible speeds and over all sizes of pulleys.

The shape of the bucket is claimed to conform to the natural flow of material at the unloading point, and the lip is fashioned to pick up capacity loads which are held by the top portion of the ends. The bolt holes are placed slightly above the center of the bucket for better balance and operation. The Calumet elevator cup is manufactured by the B. I. Weller Company, Dept. A, 327 S. LaSalle St., Chicago 4, Ill.

B.F.Goodrich

Tire cut-resistance proved on steel slag road bed

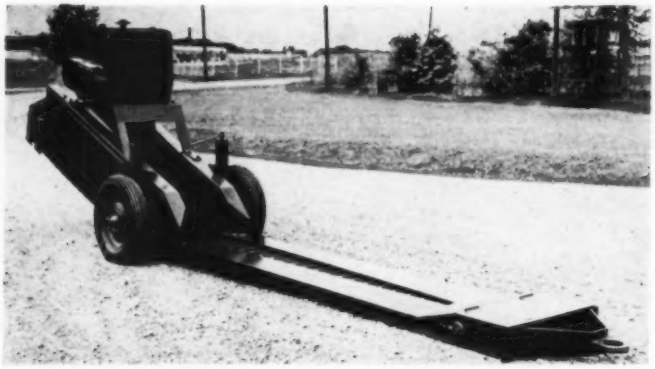
THE 30-ton mobile crane pictured above is one of 20 vehicles used by a salvage operator in the heart of the Gary, Indiana steel mill area. The tires that carry these vehicles roll over the toughest kind of road beds . . . razor-sharp slag, a bed of jagged edges. A bulldozer slices the top off a slag pile—and that's the road. Here dump trucks, bulldozers and truck-mounted cranes are in service in all kinds of weather.

These trucks, however, are 100% B. F. Goodrich equipped and there has not been one single road delay caused by tire trouble since these BFG's have been in service.

B. F. Goodrich tires were selected for use because of their superior cut and bruise resistance. The operator has found that the special tread compounds used in B. F. Goodrich tires and the unique tread design of B. F. Goodrich Universals keep cutting to an absolute minimum. These tires have greater bruise resistance because they are made with the patented B. F. Goodrich *nylon shock shield.* Strong, elastic layers of nylon are built in between the tread rubber and the cord body. Under strong impact, these nylon cords stretch and work together to absorb and distribute the shock evenly. This special feature is found in *all* BFG tires of 8 or more plies at no additional cost.

No matter what kind of off-the-road service you demand, there's a special B. F. Goodrich tire to fill your needs. Let your local dealer help you get better service and lower operating overhead. *The B. F. Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER

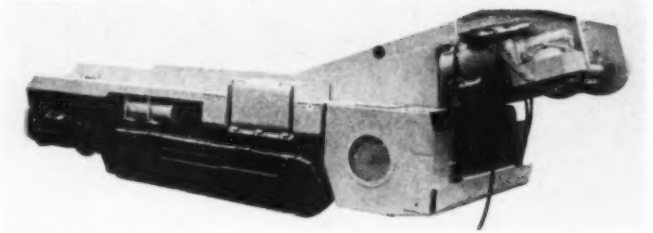


● Portable Car Unloader

A heavy-duty car unloader that has a weight of about 3,000 lb. and is mounted on two pneumatic-tired wheels is being produced by the Atlas Conveyor Company, Clintonville, Wis.

The unloader has a 24-in belt and a speed of 130 f.p.m. Cleats are on 5-in. centers with take-up and adjustment screws at head and tail pulleys. Power is supplied by gasoline or electric motors operating through a gear type speed reducer to a roller chain final drive.

Individual leveling screws on each wheel permit adjusting the unloader for uneven ground.



● Mine Shuttle Car

A cable-reel crawler-mounted steel-track shuttle car for mine use has been announced by the Locomotive and Car Equipment Department of General Electric, Schenectady 5, N.Y.

The crawler treads make possible the use of the car in places where light ground-loading is needed, and allow a wider conveyor, as no space is necessary for wheel turning clearance. Steering is by braking or locking of one tread.

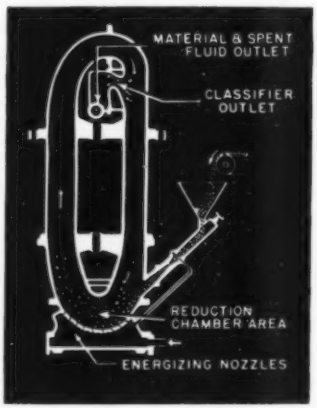
Direct-current motors drive the crawlers and the conveyor, while a motor-driven pump actuates the auxiliary equipment. Controls are in sealed-type cases. The level-winding reel holds 600 ft. of cable and may be reeled in either direction.

The car is claimed to be easy to handle, and to have extra capacity for loading as a result of the crawler design.

● Fine Reduction Mill

A fine particle reduction mill is being offered for general sale by the C. H. Wheeler Manufacturing Company, 19th Street and Sedgely Avenue, Philadelphia 32, Pa.

The mill, which is also called a "Fluid Energy Mill," has no moving parts but uses the principles of fluid energy attrition. Minus 4-mesh material is fed into the mill through a nozzle or injector, where it enters a current of pressurized air, steam, or gas traveling at supersonic velocities. The terrific speed of the circulating medium causes the individual particles in the feed to break up by abrasion and impact against each other. As the particles whirl about in the mill, they are separated by centrifugal force, so that the smaller ones are segregated at the inside of the mill and are withdrawn through an outlet at the top. Size of the product is controlled by the rate of withdrawal of the spent fluid carrying the reduced particles.



Use of steam, heated air, or gases as fluid energy sources will enable the mill to perform other functions, such as drying, simultaneously.

Products that have been tested in the mill include barytes, clays, diatomaceous earth, pigments, feldspar, graphite, gypsum, limestone, magnesium silicate, mica, sulphur and its compounds, talcs, and whiting. Other nonmetallics will be tested.

● Hoe Attachment

A hoe attachment of novel design is announced for the Koehring 304 excavator. The new design permits digging vertical walls and gives a digging depth of 19¾ ft.

The dipper is pulled by double digging lines, which eliminates reverse cable

bends and a moving line at the dipper front that might clog or be subjected to abrasive wear. Adjusting links permit three settings of the dipper to provide various digging angles.

Other features claimed for the new design are freedom from side sway, extra strength, prevention of dipper drift, and longer cable life. The attachment is produced by the Koehring Company, Milwaukee 16, Wis.

E. G. Bailey, past president of The American Society of Mechanical Engineers and vice-president of Babcock and Wilcox Company, was selected to receive the 1952 John Fritz Medal and Certificate "for outstanding engineering achievements in the field of combustion and distinguished service to his fellows in advancing the engineering profession".

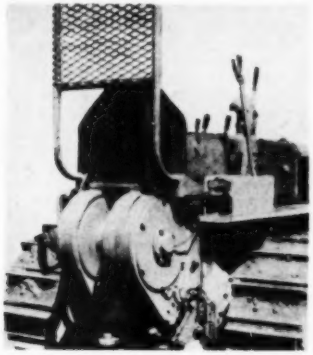
The John Fritz Medal is sponsored by the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers as a joint honor for scientific or industrial achievement in any field of pure or applied science.

trade notes

● High Speed Winch

A lightweight, free-spooling tractor winch with fast line speeds and quick positive action braking has been announced by the Hyster Company, 2902 N. E. Clackamas Street, Portland 8, Ore. The winch is especially designed for all types of Caterpillar D4 tractors.

The winch has a drum capacity of 214



ft. of ⅜-in. line and a speed up to 515 f.p.m. with a full drum. It is driven by a friction clutch actuated by hydraulic controls. Line pull ranges from 3,100 lb. with a full drum to 7,000 lb. with an empty drum. An operator guard is standard.

The State Tractor & Equipment Company, 407 South 17th Avenue, Phoenix, was recently appointed Arizona distributor for Bucyrus-Erie excavators and Hydrocranes. State Tractor & Equipment Company will continue to handle Bucyrus-Erie tractor equipment—bullgraders, bulldozers, dozer-shovels and scrapers designed for use with International crawler tractors.

McCormick Machinery Company, 6501 East Admiral Place, Tulsa, Okla., has been appointed distributor in eastern Oklahoma for Bucyrus-Erie excavators, dragline buckets, Hydrocranes, and the new Hydrohoe.

This distributor's territory will cover the eastern half of Oklahoma.

After 50 years of service, L. A. Watts has retired as manager of the service and erection section of Allis-Chalmers general machinery division.

Mr. Watts, who will remain with Allis-Chalmers on special assignment until early in 1952, has supervised the servicing and erection of much of the company's heavy machinery, including some of the largest hydro-electric plants in the United States and Japan.

C. B. Smith, superintendent of service and erection of the Atlanta district since 1941, has been named successor to Mr. Watts. He has been with Allis-Chalmers since 1929.

C. P. Suykerbuyk, who has been attached to the Los Angeles district office as a special engineer since 1914, succeeds Mr. Smith at Atlanta.

Donald F. North, explosives sales and service man for Hercules Powder Company in Pittsburgh, Pa., died on August 18. Mr. North joined Hercules in 1925. He had been ill with a heart condition for several weeks.

Thermoid Company's wholly-owned Canadian subsidiary, Joseph Stokes Rubber Co., Ltd., has concluded arrangements for the sale of substantially all of its assets to the General Tire and Rubber Co., Ltd., of Canada.

Under the terms of the sale, Thermoid Ltd., the Canadian parent of Stokes Rubber, will retain a building at Welland, Ont., and all machinery, equipment and inventory used in the manufacture and sale of brake linings and clutch facings in Canada.

Thermoid Ltd. will continue its sales of clutch facings and brake linings in the Canadian automotive market, including original equipment and replacement.

A $500,000 modernization of its Oil City, Pa., plant is planned by Worthington Pump and Machinery Corporation. Plans include re-equipping the present foundry and establishing a new electric power supply.

New molding machines, sand conditioning and sand supply equipment, and mold drying ovens will be installed in the plant. Mechanization includes installation of overhead crane service at all working stations and 500 ft. of roller conveyors. Melting capacity will be increased by installing one new cupola and reconditioning the present one. A mechanical cupola charging system will also be provided.

Organizational changes in the Crusher and Process Machinery Divisions of Nordberg Manufacturing Company, Milwaukee 7, Wis., have been announced by D. A. Cheyette, vice-president, Crusher Division.

Howard M. Zoerb, formerly chief engineer of the Crusher Division, has been appointed administrative manager and A. Hesse, formerly research engineer at Riley Stoker Corporation, has been named divisional chief engineer, Crusher and Process Machinery Divisions. Jack B. Bond, district manager, Crusher and Process Machinery Divisions since 1949, has been named sales manager of these divisions; and Harold N. Propp, assistant district manager, will assume Mr. Bond's duties as district manager, Central Territory.

In addition, Ewald Werner, assistant chief engineer, was appointed research and development engineer, Crusher Division. Stanley L. Apolant, of the Process Machinery Division, was named research and development engineer in that division, assigned to the New York office.

H. M. Zoerb

J. B. Bond

Other changes announced were the appointment of E. F. Zillman as coordinator of crusher and process machinery sales and of W. J. Brenneman, Henry Behr, and John Kobel as sales engineers. Mr. Brenneman will be assigned to Nordberg's branch office in Toronto, Ontario, and Mr. Behr and Mr. Kobel will have headquarters at the company's New York office.

Peter B. Bradley has been appointed assistant managing director of the Bradley Pulverizer Company, Allentown, Pa.

Mr. Bradley is the fourth generation of the family to become an executive of the company. His great-grandfather, William Bradley, was one of the founders of the firm. His grandfather, Peter Bradley, was a former president, and his father, William L. Bradley, is the present president.

He has spent considerable time in the English branch of the company at London, and is particularly experienced in the cement and agricultural fields.

In the final ratings of the independent board of judges in the Financial World Survey of Annual Reports, Link-Belt Company was judged as having the best annual report of the materials-handling equipment category. The bronze "Oscar of Industry" trophy was presented to George P. Torrence, president of the company, at the Annual Awards Banquet in the Grand Ballroom of the Hotel Statler, New York.

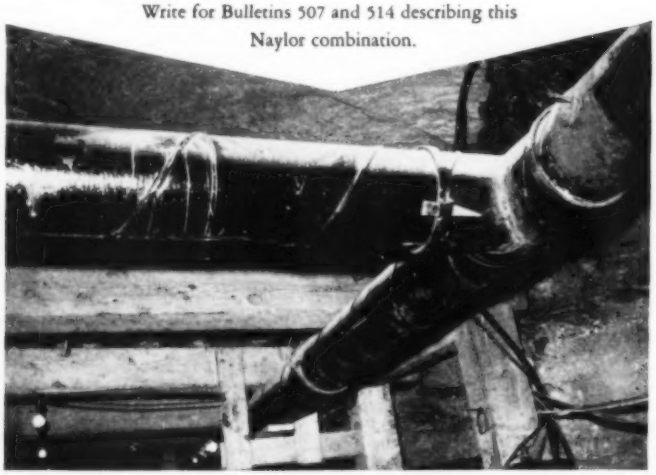
A total of 5,000 annual reports were considered this year in the international competition, the eleventh of the series of surveys, and these were judged in 100 industrial classifications. In the materials-handling equipment category, Black, Sivalls & Bryson was runner-up for top honors, while Chain Belt Co. placed third.

HOW TO PROVIDE
FRESH AIR For Underground Operations

Mining engineers have found the practical answer in the combination of Naylor Pipe and Naylor Wedge-Lock Couplings.

Air lines can be installed quickly with this dependable lightweight pipe and these one-piece, positive-type couplings that provide the fastest possible connections, even in limited space. Though light in weight, Naylor Pipe has the extra collapse strength, due to its exclusive Lockseam Spiralweld structure, to do double duty in push-pull ventilating service. Thus Naylor lines supply fresh air as well as exhaust dangerous fumes.

Write for Bulletins 507 and 514 describing this Naylor combination.



NAYLOR PIPE

Naylor Pipe Company, 1257 E. 92nd St., Chicago 19, Ill.
New York Office, 350 Madison Avenue, New York 17, N.Y.

L. E. Rossiter

Two important appointments were recently announced by officials of the Nopco Chemical Company, Harrison, N. J.

Laurence E. Rossiter is now New England district sales manager, replacing Harold J. Waldron, who is retiring. Mr. Rossiter has been with Nopco for more than ten years. He was originally on the products control laboratory staff, and was subsequently chief chemist of the textile service laboratory, a member of the field force, and a technical sales representative in southern New England. As a district sales manager he will be in charge of the New England sales force and will operate from the firm's Boston offices.

John R. Craig was named to the Mid-West sales force of Nopco, his territory to include Texas and Oklahoma. He has been a member of the Nopco organization for the last ten years, and has worked at the pilot plant and in the control and sales product laboratories.

Peter V. Martin, sales manager of the Metallurgical Department, Engineering and Construction Division of Koppers Company, Inc., has been made an assistant vice-president in the Freyn engineering department of the division.

Koppers Freyn department, which has headquarters in Chicago, specializes in engineering and construction of blast furnaces, open-hearth furnaces, sintering plants and related installations.

Appointment of Austin L. Hawk as assistant manager of the western sales district, Manhattan Rubber Division of Raybestos-Manhattan, Inc., has been announced. Mr. Hawk is located at the western sales district offices at Chicago.

At the same time announcement was made of the appointment of S. V. V. Hoffman as regional manager of Raybestos-Manhattan's West Coast Sales Division for southern California. Mr. Hoffman's headquarters are in Los Angeles.

Other advancements announced recently are the appointments of A. N. Johnston Jr., assistant manager of the central sales district, Manhattan Rubber Division, and D. H. Cottrille, West Virginia regional manager at Clarksburg, W. V.

The appointment of Frank P. Minnelli as manager of a newly organized market research department of the Yale & Towne Manufacturing Company, Philadelphia Division, has been announced.

Mr. Minnelli, who was assistant to Elmo Roper, will aid in the development of future sales to industry, and in the development of sales potential of present and future products of the Philadelphia Division of Yale & Towne.

Fruehauf Trailer Company has announced the formation of a South American company for the manufacture of trailers for the Brazilian market. The new company will have headquarters in Sao Paulo, Brazil. Dr. A. F. Torres has been elected president, and L. C. Burnett managing director of the new enterprise.

Link-Belt Speeder Corporation has announced that Kenneth T. Rudd has been elected treasurer, with headquarters in Cedar Rapids, Ia.

Harry E. Kellogg, vice-president and treasurer of Link-Belt Company, Chicago, has previously served also as treasurer of Link-Belt Speeder Corporation. It was explained that the growing volume of work makes it desirable to have the treasurer located at headquarters.

The Anker-Holth Manufacturing Company, Port Huron, Mich., makers of air and hydraulic cylinders and control valves and related equipment, has been purchased by the Wellman Engineering Company, Cleveland, O. The Anker-Holth plant will be known as the Anker-Holth Division of Wellman Engineering Company.

A new company, the Ajax Electric Motors Company, 200 Troup Street, Rochester, N. Y., has been formed to serve as world-wide distributors for new electric motors, control equipment, and transformers.

A new warehouse providing expanded facilities for servicing the Pacific Northwest is being constructed for Chain Belt Company in Portland, Ore.

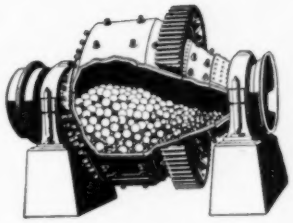
Besides housing increased stocks of chain, sprockets, power transmission equipment, take-ups, elevator buckets, belt convevor idlers, and spray nozzles, the new building will also contain the company's Portland district sales office.

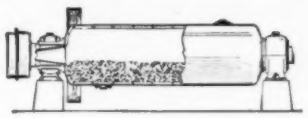
Edwin H. Howell has been appointed assistant manager of the east central district of the General Electric Company's Apparatus Marketing Division. Headquarters of the district are at Cleveland, O. The territory includes most of Ohio, Indiana, and Kentucky, as well as a few counties in Pennsylvania and Virginia.

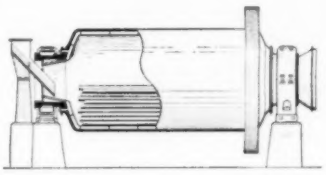
Arthur R. Hines, of Detroit, Mich., has been appointed assistant manager of marketing for the General Electric Company it was announced recently. Mr. Hines will be located in the company's New York office at 570 Lexington Avenue. He has been manager of the Michigan sales district of the company's apparatus lines since that district's formation in 1949.

Sterling Electric Motors, of Los Angeles, Calif., has let contracts for the construction of a new $1,000,000 plant an on 11-acre site in Van Wert, O., president Earl Mendenhall announced recently.

The new plant is designed for defense production to expand Sterling's manufacturing facilities for the production of precision gearing systems for the aircraft industry.







The Hardinge "ELECTRIC EAR" is....

the only device of its kind that controls the feed rate in grinding mills by listening to the sound of the rotating load. It compensates for changes in hardness, size of feed, etc. — producing a more uniform oversize, increasing mill capacity 10 to 20%, and freeing the operator for other duties. Ask for bulletin 42-8.

If your problem is

GRINDING

• CONICAL MILLS

The Hardinge Conical Ball (or Pebble) Mill is unequalled in efficiency. Grinds wet or dry, in open or closed circuit. Outstanding feature: natural size segregation of grinding media, from feed to discharge. Bulletin 17-B-8 for dry grinding; Bulletin AH-389-8 for wet grinding.

• TUBE MILLS

For a fine product in open circuit without the use of classifiers. For mixing and grinding to secure a smooth texture or plastic product. Bulletin 18-A-8.

• ROD MILLS

Ideal for producing minimum oversize in open circuit grinding. Grinds either wet or dry. Conical heads reduce friction, prevent congestion of charge at the ends, and align the rods. Bulletin 25-B-8.

"Keeps my ball mill up to 'snuff"

*Reg. U. S. Patent Office

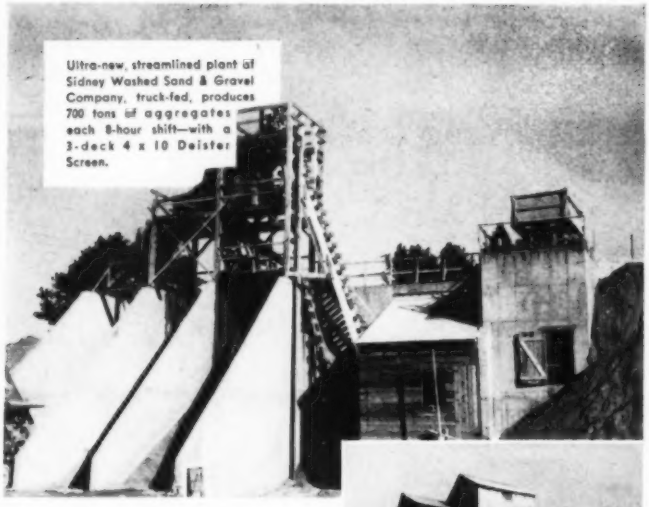
HARDINGE

COMPANY, INCORPORATED

YORK, PENNSYLVANIA—240 Arch St. Main Office and Works

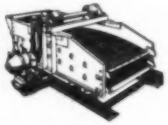
NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBBING, MINN. • TORONTO 1

122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.



Ultra-new, streamlined plant of Sidney Washed Sand & Gravel Company, truck-fed, produces 700 tons of aggregates each 8-hour shift—with a 3-deck 4 x 10 Deister Screen.

Long, trouble-free service by three Deister Screens in its old plant (still in use) led Sidney Company to buy Deister Screen for its new plant.



BOUGHT FOR THE NEW

Sidney Washed Sand and Gravel Company, Sidney, Ohio, equipped its new plant with a new three-deck 4 x 10 Deister Screen, to get 700 tons per 8-hour shift.

BECAUSE PROVED IN THE OLD

Sidney's old plant, still going strong, has THREE Deister Screens—a 30" x 48" single-deck scalper, two 3 x 6 three-deck, and a 3 x 10 single-deck. Capacity is 500 tons per day.

Plant superintendent, Leonard Hershey, who has operated gravel plants for 25 years, said: "Deister Screens do a better job and cause less trouble than any screen I know."

Deister will do the same for you. Get the facts from your Deister dealer—or direct from the factory.

DEISTER SCREENS

DEISTER MACHINE COMPANY

FORT WAYNE 4, INDIANA

R. E. McCluskey

Roy E. McCluskey, vice-president and general sales manager of the LeTourneau company, has been elected to the board of directors of the International Road Federation, the company officials announced recently.

This Federation, officially designated by the Economic Cooperation Administration (ECA) as spokesman for the highway industry and associated manufacturers in connection with the foreign programs of the ECA, consists of four controlling bodies: the construction equipment industry, the rubber industry, and automobile industry, and the petroleum industry.

Mr. McCluskey was recently named secretary-treasurer of the board of directors of the Construction Industry Manufacturers Association (CIMA), which is in constant consultation with the government on utilization of construction equipment in civilian and military use. He is also on the International Committee and the Budget and Finance Committee of CIMA.

The appointment of Dorsey H. Rowe as advertising manager of the Cleveland Worm and Gear Company and its affiliate, The Farval Corporation, was recently announced.

Mr. Rowe comes to Cleveland Worm and Gear from the Penton Publishing Company, where he served for several years as associate editor of the *New Equipment Digest*.

G. F. Victor Jr. has been appointed a district manager of Air Reduction Magnolia Company, a division of Air Reduction Company, Inc.

Mr. Vietor will make headquarters at Houston, Tex., where he will have sales responsibility for the Houston district. Branch offices are at San Antonio, Beaumont, and Corpus Christi, Tex.

Richard E. McElvain has been transferred to the Duluth, Minn., office of Allis-Chalmers as a sales representative specializing in crushing and mining equipment.

Edmund C. Schorr has been appointed manager of sales of the General Electric Company's specialty transformer and ballast department at Fort Wayne, Ind. As assistant manager of sales, Mr. Schorr served in the company's Chicago office from 1943 until 1950 as a specialty transformer and ballast specialist.

Eads Johnson Jr. has been appointed executive vice-president of the Southern Wheel Division, American Brake Shoe Company. He was formerly assistant vice-president.

William A. Spence has been appointed general manager of Ohio Hoist & Mfg. Co., Cleveland.

For the last five years Mr. Spence was with Manning, Maxwell & Moore, Inc., manufacturers of hoists and materials-handling equipment, assigned to sales and service in northern California, Utah, Nevada, Idaho and Wyoming. In his new position he will supervise the manufacture and sales distribution of hoists and other materials-handling equipment.

Robert S. Bubb has joined American Brake Shoe Company as marketing engineer. He will devote his time to studying the distribution methods of the company's ten operating divisions in their continuing effort to further diversify their markets and to give better service to their customers.

O. F. Bender

The Woodhouse Chain Works, Trenton, N. J., has announced the appointment of Otto F. Bender as district sales manager for the Philadelphia area, with headquarters in Philadelphia. In his new assignment, Mr. Bender will handle sales of the complete Woodhouse line of welded chain, weldless chain, hoists, and other materials-handling equipment.

H. Gordon Smith, vice-president and general manager of the U.S. Rubber Company's Textile Division, has been named to the newly-created post of executive vice-president of the firm. The new position was created because H. E. Humphreys Jr. has been called upon to do double duty as president and chairman. William E. Clark, assistant general manager of the Textile Division, has been elected a vice-president and was made general manager of the division.

Francis M. Hernan has joined the Fruehauf Trailer Company as assistant controller in charge of plant accounting at the Detroit office. Before joining Fruehauf, Mr. Hernan was budget director of Anchor Hocking Glass Corporation for six years, and prior to that he was assistant controller of Weatherhead Company for five years.

Plans for the construction of a $3,000,000 plant in Wooster, O., for the manufacture of electrically-driven hydraulic and fuel pumps for jet engines have been announced by Roy C. Ingersoll, president of Borg-Warner Corp.

The 104,000 sq. ft. factory is expected to employ 650 to 800 persons when production gets under way, in April or May of next year. Erection of the plant will begin as soon as the corporation's request for allocations of building materials, under the Controlled Materials Plan, has been granted.

BELTING
BUILT FOR THE TOUGH JOBS!

HEWITT-ROBINS Conveyor Belting gives longer service at less cost

When trouble comes by the ton . . . whether it's heavy abrasives like ore and rock or wet, gritty materials like fines and slag . . . the easiest, most dependable and most economical way to move it is on a Hewitt-Robins conveyor belt.

For over half a century the Hewitt Rubber Division of Hewitt-Robins Inc., has pioneered in making the right belt for every conveyor installation. Today, engineers the world over instinctively specify Maltese Cross® where the going is really tough, Ajax® for general service, and Conservo® for lighter applications and portable conveyors.

In Hewitt Rubber belting they get full protection against moisture, oils, flexing and ply-separation, as well as treatment against mildew. They get abrasion-resistance from extra-tough rubber covers, heavily textile-reinforced for maximum strength plus flexibility.

* * *

Engineers turn to Hewitt-Robins not only for belting but for entire belt conveyor systems. They know Hewitt-Robins is *the only firm able to accept complete responsibility*. For belting, address Hewitt Rubber Division, Buffalo 5, N. Y.; for machinery, Robins Conveyors Division, Passaic, N. J.; for engineering services, Robins Engineers Division, 157 Chambers St., New York.

HEWITT-ROBINS

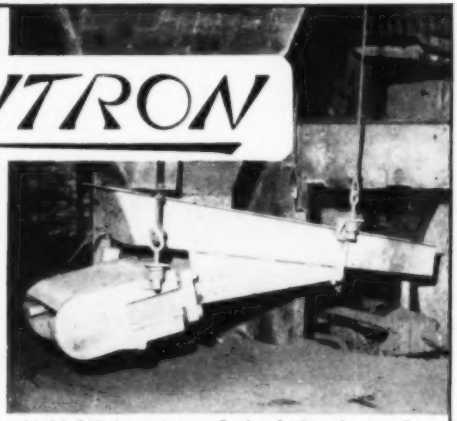
CONVEYOR BELTING

HEWITT-ROBINS (HR) INCORPORATED

BELT CONVEYORS (*belting and machinery*) • BELT AND BUCKET ELEVATORS
CAR SHAKEOUTS • DEWATERIZERS • FEEDERS • FOAM RUBBER PRODUCTS
FOUNDRY SHAKEOUTS • INDUSTRIAL HOSE • MINE CONVEYORS • MOLDED RUBBER GOODS
RUBBERLOKT ROTARY WIRE BRUSHES • SCREEN CLOTH • SKIP HOISTS • STACKERS
TRANSMISSION BELTING • VIBRATING CONVEYORS, FEEDERS AND SCREENS

SYNTRON

BIN VIBRATORS
★
VIBRATING GRIZZLIES
★
VIBRATORY FEEDERS
★
LONG CONVEYORS



Model F-33, heavy tonnage Feeder, feeding clay to a Pan Mill in a refractory.

STAR PERFORMERS OF MATERIAL HANDLING

The ELECTRIC VIBRATORS' pulsating vibrations, up to 3600 per minute, assures free flowing materials and eliminate arching and plugging, whether it's a small 1-cu. ft. hopper or large 100-ton bin. Also available in a complete range of semi-noiseless models.

VIBRATING GRIZZLY FEEDERS offer variable controlled feeding and coarse sizing. They are effective in heavy tonnage feeding for preliminary scalping. They handle most types of bulk materials — hot or cold, dry or damp — for efficient low cost operation.

VIBRATORY FEEDERS handle the majority of bulk materials at a controlled rate of feed. They are adaptable to automatic control and also to various applications in material handling operations. Using no motors, gears, belts, sprockets, etc., they have low cost maintenance and replacements.

LONG CONVEYOR models of the Vibratory Feeder can be made up in various lengths and capacities, with flat pan or tubular troughs. The tubular trough is used where a sealed-in unit is needed for conveying extremely hot, poisonous and dusty materials or for conveying pure, clean materials without contaminations.

WRITE FOR CATALOG DATA

SYNTRON COMPANY
385 Carson Avenue — Homer City, Penna.

W. H. Allen

Willard H. Allen, New Jersey's Secretary of Agriculture, has been elected to the board of directors of the Thermoid Company, Trenton, N. J., according to Fred Schluter, president of the firm.

A past-president of both the National Association of Commissioners and Secretaries and Directors of Agriculture, Mr. Allen is presently a vice-president and director of the New Jersey State Chamber of Commerce.

W. Cordes Snyder, Jr., of Sewickley, Pa., has been elected president and chief executive officer of Blaw-Knox Company. Mr. Snyder previously was a vice-president of the company in charge of its Lewis Foundry & Machine Division, and more recently has been vice-president of the Koppers Company and manager of its Metallurgical Department.

William P. Witherow, formerly president and chairman of Blaw-Knox Company, will continue as chairman of the board. Chester H. Lehman will continue in his present capacities of vice-chairman of the board and executive vice-president.

The Signode Steel Strapping Company of Chicago has announced that James R. Elsinger, company representative, has been transferred to the firm's Baltimore district.

Mr. Elsinger's new territory serves North Carolina and part of Virginia in the fields of package protection, car loading, and car bracing.

The Neptune Meter Company has announced the appointment of Wentworth Smith as general sales manager. He had been assistant general sales manager since 1950.

In his new position Mr. Smith will be assisted by Mr. Walter H. Sieger, who will be in charge of the sale of Red Seal petroleum and industrial meters.

Three appointments in the purchasing section of the General Electric Materials and Purchasing Department were announced recently. Vincent P. Gregg is manager of purchasing of nonferrous materials; Bruce H. Bradbeer, Schenectady, is manager of purchasing of ferrous materials; and Herbert L. Schnell is manager of purchasing of factory equipment and subcontracting.

The Hendrick Manufacturing Company, Carbondale, Pa., is celebrating the 75th anniversary of its founding this year. The company was established in 1876 for the manufacture of perforated screens for refinery use, and has since expanded into many other fields using screens and other metal products.

J. P. Brehm

J. Peter Brehm has been named district sales representative in the San Francisco area for the Woven Wire Fabrics Division of John A. Roebling's Sons Company.

Mr. Brehm, a graduate of Santa Monica City College, Santa Monica, Calif., is a veteran of World War II. Prior to his new appointment, he was a member of the division's Los Angeles sales force.

Creation of six divisional sales areas and the promotion of six executives to the position of divisional manager has been announced by the U. S. Tires Division of the United States Rubber Company.

William J. Palmer becomes manager of the Eastern Division, with offices in New York. This division will include the sales districts of New York, Boston, Buffalo, Newark, Baltimore, Philadelphia, and Springfield. Mr. Palmer has been district manager at New York, where Louis B. Giardino will succeed him.

Frank C. Johnson will head the new North Central Division, with headquarters in Cincinnati, where he has been serving as district manager. The Cincinnati, Detroit, Indianapolis, Grand Rapids, Cleveland, and Pittsburgh districts will make up his division. Mr. Johnson's most recent assignment has been as district manager at Cincinnati. He will be succeeded there by James A. Napier.

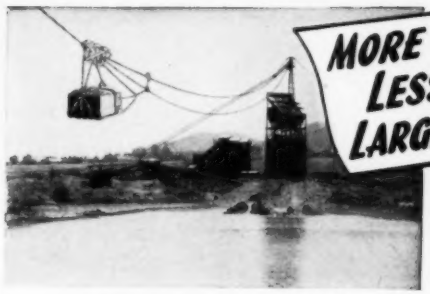
The Central Division will be composed of the sales districts of Chicago, Minneapolis, Fargo, Milwaukee, and St. Louis. The division manager will be Ben H. Bowen, who has been district manager at Chicago. Mr. Bowen will continue to maintain offices in Chicago.

The Dallas, Kansas City, Oklahoma City, Omaha, and Des Moines districts will comprise the new Mid-Western Division, with James E. Kennedy serving as divisional manager. Mr. Kennedy will maintain offices in Dallas, where he has been district manager since 1946. Paul J. Sandridge becomes district manager at Dallas.

Harry C. Oliver, who has been district manager of the Los Angeles district, becomes divisional manager of the Western Division which includes Los Angeles, San Francisco, Denver, and Salt Lake City. Mr. Oliver's offices will be in the Los Angeles plant of U. S. Rubber. Walter F. Brown will succeed Mr. Oliver as district manager.

Harry R. Mack has been assigned as divisional manager of the Southern Division with headquarters in Atlanta. As field manager of sales he had been stationed in the general offices in New York. His division will include Atlanta, Charlotte, Memphis, and New Orleans.

R. W. Collings has been appointed market development manager to plan and coordinate market development activities.



MORE YARDAGE
LESS LABOR
LARGER PROFITS

Here is a Sauerman Slackline Cableway supplying a screening plant with 225 tons of gravel an hour. Pit is 900' long, 400' wide, 100' deep.

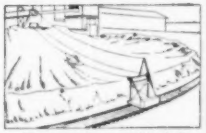
Why it pays to use

SAUERMAN MACHINES

Savings in equipment cost, time, labor and maintenance are four big reasons for using Sauerman Scraper and Cableway machines for all your long range material handling work.

Sauerman Scraper Excavator

One-man control, fast action, simple and trouble-free. A Sauerman machine reaches across a river down into a pit, up to the top of a hill or across a wide stockpile—moves material from any point within its cable radius, and dumps automatically wherever required. Maintenance is easy; a few expendable parts take all the wear.



Sauerman Scraper Stockpiler

Sauerman Slackline Cableway

Whether you handle a few tons a day, or many thousand tons, there is a size and type of Sauerman machine suited to your requirements—a machine that will give you years of steady service at minimum expense, no matter how tough the work it is called upon to do.

Sauerman Tower Excavator

Interesting Catalogs and valuable advice are yours for the asking.

The different Sauerman machines are described in detail in a series of catalogs, liberally illustrated with drawings and photographs. Tell us about your material handling problems and we will send you the catalogs that will be of most interest to you.

SAUERMAN BROS., Inc.

534 S. CLINTON ST. CHICAGO 7, ILLINOIS

H. V. Rasmussen

H. V. Rasmussen has been appointed executive engineer at the Wellsville, N. Y., plant of Worthington Pump and Machinery Corporation.

Mr. Rasmussen spent a number of years with both the Westinghouse Electric Corporation and the De-Laval Steam Turbine Company. During World War II he was a consultant for National Defense Research at Columbia University. He also served as a representative on both the Navy-Industry Committee on Propulsion Turbines and the advisory committee of the International Electro-Technical Commission. He is a member of the American Society of Mechanical Engineers and a civilian member of the American Society of Naval Engineers.

Ward M. Canady, president of Willys-Overland Motors, Inc., Toledo, O., has announced a three-way co-operative agreement between Canada, Ford Motor Company of Canada, Ltd., and the Willys-Overland firm for the production in Canada of quarter-ton 4 by 4 military trucks for exclusive use by the Canadian military forces. The trucks have the same specifications as the vehicles built by Willys under its trade name "Jeep".

The Truck and Coach Division of General Motors has started production on its new 6 by 6 tactical military truck, the M-135, it was announced by Roger M. Kyes, vice-president of GM and general manager of the division. Mr. Kyes disclosed that the first vehicle had rolled off the assembly line on September 13, less than 10 months after the GMC Truck and Coach Division had been given a letter contract to produce the new truck.

Harbison-Walker Refractories Company of Pittsburgh, Pa., through a wholly-owned subsidiary, has acquired the Warm Springs, Calif., plant of La-Clede Christy Company of Chicago. The Harbison-Walker firm has also organized a wholly-owned Brazilian subsidiary, Harbison-Walker Minerios Ltda., which has acquired exclusive mining rights to large deposits of exceptionally pure magnesite in Brazil.

Edward J. Roesch has been appointed superintendent of the Meadow Lands, Pa., plant of the Brake Shoe and Castings Division, American Brake Shoe Company of New York. Thomas P. Wallace has been appointed superintendent of the Division's Buffalo, N.Y., plant, succeeding Mr. Roesch.

Mr. Roesch started with the company in 1917 at Buffalo and became superintendent there in 1936. Mr. Wallace, former foundry foreman at the Division's Norwood, Mass., plant, was employed by the firm in 1940.

Richard A. Flinn, assistant chief metallurgist in American Brake Shoe Company's research and development center, will accept an associate professorship of product engineering and metallurgical engineering at the University of Michigan. He will also be in charge of the University's experimental foundry.

Mr. Flinn will leave American Brake Shoe near the end of this year, but it is expected that he will retain connections with the company as a consultant.

Westinghouse Electric Corporation has announced a $296,000,000 expansion program to be carried out in the next two years. The program involves construction of motor and generator plants, lamp-making facilities, electronics plants, and facilities for the production of defense products and household appliances. The company's output will be more than doubled by the expansion.

The C. H. Wheeler Manufacturing Company, 19 and Sedgley Avenue, Philadelphia 32, Pa., makers of the Wheeler fine particle reduction mills, have announced a new sales policy whereby their fluid energy mills will be sold outright. Formerly the mills which are used for ultra-fine reduction, were leased on a rental basis.

"down-time"..
eating into
your earnings?
Those who operate Eagle Hammermills and Jaw Crushers are pleased with the speed of replacing wear parts. Interior is quickly accessible. Many parts are reversible or interchangeable for extra service.
And we bend over backwards to speed parts to you —day or night.
It all figures out to less down-time — more profit!
Send for complete specifications!
EAGLE
JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS
CRUSHER CO., Inc.
GALION
OHIO·U·S·A

More Information, Please

CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. Tri-Clad Induction Frequency Converters. GEA 5687. This four-page two-color folder on induction frequency converters describes the three-phase equipment in ratings from ¾ to 100 kw. The fundamentals, operation, and construction features of the high-frequency power supply apparatus are covered. Applications information, modifications, and limitations are given as well as complete tables of ratings and frame sizes. General Electric.

2. The New Blaw-Knox Heavy-Duty Hy-Boy Trukmixer. Bulletin 2384. The front of this six-page folder lists 26 advantages of the new truck mixer built by the company. The inside pages illustrate and describe various mechanical features such as the revolving hopper, transmission and drive assembly, water measuring tank and valve, and the power unit. The features that give this model the name of heavy-duty lite-weight mixer are pointed out. Blaw-Knox division of Blaw-Knox Company.

3. Syntron Selenium Rectifiers. P.O. 85-640. This folder gives sizes, ratings, and other pertinent information on a line of selenium rectifiers used to convert alternating current to direct current for powering welders, battery charges, d.c. motors, vibrators, magnetic separators, and many other items requiring this type of current. Syntron Company.

4. Worthington Blue Brute Hose Fittings. Bulletin H-1200-B44. This bulletin gives sizes, part numbers, and applications of hose nipples, union nuts, hose clamps, coupling spuds, reducing coupling spuds, spuds, reducing spuds, threaded pipe nipples, hose valves, and splicing nipples. Hose, air hose assemblies, water hose assemblies, line oilers, water valves, and air line manifolds are also covered. Worthington Pump and Machinery Company.

5. Coralux Annealed Perlite Aggregates. Form CC 951-25. An attractive 8-page bulletin that uses photos and drawings to illustrate the properties of this perlite material. Plaster aggregates, acoustical plaster, and insulating concrete aggregate are covered. Mixing proportions, sound absorption properties, fire resistance, compressive strengths and much other valuable information is included. F. E. Schundler & Company.

6. Differential Converter. Pneumatic Transmitter for Flow or Differential Pressure. Catalog 2281. A mercuryless flow meter which features fast response for flow control is described in this 16-page catalog. Operating principles, construction features, typical applications, detailed specifications and installation methods are covered. Brown Instruments Division, Minneapolis-Honeywell Regulator Company.

7. Caterpillar DW 20 - DW 21 Tractors. Form 50160. A 24-page booklet that features the new six-cylinder supercharged 225 hp. diesel engine used in these two models. Additional information is presented on the specifications for the DW 20 and DW 21 tractors, and on the 205 bulldozer, the 27 cable control, W 20 wagon, and 20 and 21 scrapers. The booklet is highly illustrated and shows the major features of the items covered. The tractors and the matching scrapers and wagons are designed for heavy-duty, high-speed earthmoving. Caterpillar.

8. Ruggles-Coles Rotary Dryers, Kilns, Coolers. Bulletin No. AH-438. This six-page expanding folder uses cutaway illustrations to portray the half dozen types of dryers made. Longitudinal and cross section views are used to show the flow of the drying medium, and of the product. Other related items such as kilns, dust collectors, and coolers are shown. The cover page shows typical installations of the dryers. Hardinge Company.

9. Heavy-Duty Agricultural Spreader. A single-page mailing piece that lists and illustrates the lime and fertilizer spreaders made by the company. Photos and drawings point out the features such as twin spinners, adjustable speeds, positive drive conveyor, and many other points. Anthony Company.

10. Acco Registered Dualoc Boom Cable Assemblies. DH-220. This folder shows uses for the boom cable assemblies, compares types of cable fastenings, and lists 9 points of superiority of the Dualoc assemblies. The two types of terminals available, and the sizes made are listed. Wire Rope Sling Department, American Chain and Cable Company.

11. Dust and Fume Control. Catalog 72-B. A 40-page catalog that fully covers the field of dust and fume collection by means of dust tube collectors. Engineering service, advantages, types of installations, construction features, discharge valves, sizes and specifications, styles of collectors, operating features, auxiliary equipment, and useful tables are included. Drawings, photographs, and diagrams are all used to present the story comprehensively and understandably. A valuable catalog for use in planning dust control installations. American Wheelabrator and Equipment Corp.

12. Foamsol, the New Foaming and Dispersing Agent for Air-Entrained Concrete. Bulletin No. C-10. This six-page folder contains all the pertinent data on this air-entraining and dispersing material for use in concrete. The history of the product, use, value, directions, and comparison of tests are given so that virtually all questions in regard to the material are covered. Onyx Oil and Chemical Company.

13. Baldwin 100,000 Pounds Capacity Cement and Concrete Testing Machine. Bulletin No. 327. This two-page bulletin covers the features of a concrete testing machine—such as hydraulic loading load weighing, accessories, and specifications. This tester features independent load indication by means of an Emery capsule so that the load indication is free from the friction and other variables of the load applying system. Baldwin-Lima-Hamilton Corporation.

14. "Quick-Way" to the Job, Thru the Job. Bulletin Number E-9. This 20-page bulletin is devoted to the 4/10ths yard truck-mounted shovel. Designed to be

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November, 1951

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NAME

TITLE

COMPANY

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mounted on any 5-ton truck chassis the shovel can be converted to crane, dragline, clamshell, orange-peel, trench hoe or pile driver service. Mobility of operation, interchangeability of parts, and specifications and ratings are included in the text and tables. Photos and text explain the operation of each of the services that the shovel can be easily adapted to. "Quick-Way" Truck Shovel Company.

15. Denver "Sub-A" Laboratory Flotation Machines. Bulletin No. LFS-B1. This catalog sheet illustrates the small laboratory model flotation machines designed to duplicate large-scale operations for accurate testing and control of plant operations. These machines are self-contained and may be equipped with a glass side so that the entire reaction can be observed. Denver Equipment Company.

16. Fuller Rotary Compressors. Bulletin C-6. Photographs of numerous installations bring out the various uses for this type of compressor. In addition photos and drawings illustrate the construction features and show the principle of the rotary type of compressor. The text explains the points shown in the drawings. Fuller Company.

17. Morris Centrifugal Pumps. Bulletin 183. This eight-page pocket size bulletin is a pictorial introduction to the various types of pumps made that utilize the centrifugal principle. Double suction, large volume, axial flow, heavy media, high solids content, sand, dredge, material handling, slurry and fish pumps are illustrated. This folder states the principal applications of each pump and the sizes in which it is manufactured. Morris Machine Works.

18. Embeco Method for Setting Floor Brick. Form E-27. This four-page illustrated bulletin describes a new method for setting floor tile and brick. Most of the bulletin is devoted to giving the characteristics of the Embeco material while suggestions for using the material are included. Narrow, non-shrinking joints are said to be achieved by the use of this product and its method of application. The Masters Builders Company.

19. D. O. James Power Saving Products. This folder serves to introduce all the many types of power saving products made by the company. Items shown include speed reducers, gears, racks, flexible couplings, and motorized speed reducers. Illustrations and accompanying text serve to cover the varied lines. Pictured and described are speed reducers in many styles such as herringbone, worm, bevel gear, planetary, helical worm, double worm, and motorized forms. D. O. James Gear Manufacturing Co.

20. Warner Electric Brakes and Clutches for Industrial Applications. Catalog No. 701-A. This 44-page booklet describes the construction and use of electric brakes, clutches and brake-clutch combinations. Mounting dimensions for the various sizes of brakes, clutches, and combination units are given. Mountings, accessories, motor brakes, shoe type brakes, power conversion units, and a list of representatives and their addresses completes the information given. Industrial Division, Warner Electric Brake and Clutch Company.

21. Tracto Lift The All Purpose Fork Lift Truck. This 8-page bulletin uses pictures to tell the story of the many uses of the heavy duty fork lift truck being manufactured under this name. Various styles of forks are shown for tile, brick and block handling and attachments for conversion to crane hoisting or aggregate hoisting and dumping are included. This unit is essentially a heavy duty tractor with a fork truck assembly and other necessary modifications. Tracto Lift Company.

22. Finest in Worm-Gear Drives. The eight pages of this folder show applications of the various models of worm-gear drives, while the complete range of types is shown on the back page. This serves as an introduction to the types of worm-gear reducers made and some of the uses for them. The Cleveland Worm and Gear Company.

23. Buda Model FPB 20-24 and Model FPB 20-15 Fork Lift Trucks. Bulletin 1550. This four-page folder illustrates the 2000-lb. capacity fork truck on the front and back covers. Operating data is summarized and dimensions and specifications are given. This folder *is* designed to give complete, concise information on the trucks and to cover all the points that might be raised in connection with them. The Buda Company.

24. Resistance Welding of Nickel and High-Nickel Alloys. Technical Bulletin T-33. This 34-page booklet covers the field of resistance welding (spot, projection, seam, and flash) and resistance brazing of nickel and high nickel alloys. Tables on mechanical properties, chemical compositions and recommended conditions for welding are included. Drawings, and photographs including many microphotographs supplement the text and aid in presenting the material in a clear manner. While devoted primarily to nickel and nickel alloys other metals are mentioned for comparative and illustrative purposes so that much information on welding of all kinds is given. Development and Research Division, The International Nickel Company.

25. Lake Shore Coal and Material Handling Equipment. Form No. 512-25-POL. This 12-page illustrated bulletin describes a line of material handling equipment that is especially adapted for use on bulk materials such as sand, gravel, etc. Flight conveyors, radial conveyors for stockpiling, stationary booms, car unloaders, belt conveyors, and various accessories such as bar screens, shaker screens, and discharge chutes for use with the conveyors are illustrated and described. Low types and portable models of conveyors are shown as well as the conventional types. Lake Shore Engineering Company.

26. Quinn Standard Concrete Pipe Construction. A 26-page catalog of forms for concrete pipe fabrication. Forms for heavy-duty, and medium-duty pipe are listed as well as special shapes and sizes. Machine and hand operated models are described. Tables showing dimensions and giving various cost factors are included so that costs and selling prices can be determined. Comparative capacities of concrete and corrugated pipe are shown by charts and graphs. Quinn Wire and Iron Works.

27. Farrell's "85" Elevating and Conveying Buckets. This four-page folder illustrates and gives specifications for the line of elevating buckets made of Farrell's "85" steel—a tough abrasion resisting metal. The A, B, and C styles are shown as well as the reinforced back and lip designs. Stock sizes are carried to fit the popular elevator styles and others can be supplied rapidly. Farrell-Cheek Steel Company.

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Deep in the heart of a granite quarry in North Carolina . . . millions of tons ago . . . a 42 inch Quaker Conveyor Belt was installed on 550 foot centers. Since then sand, stone and rock have been dumped on to the belt and traveled tens of thousands of miles. Rain and snow, heat and cold have done their worst. Today, that same Quaker Conveyor Belt is ready for more!

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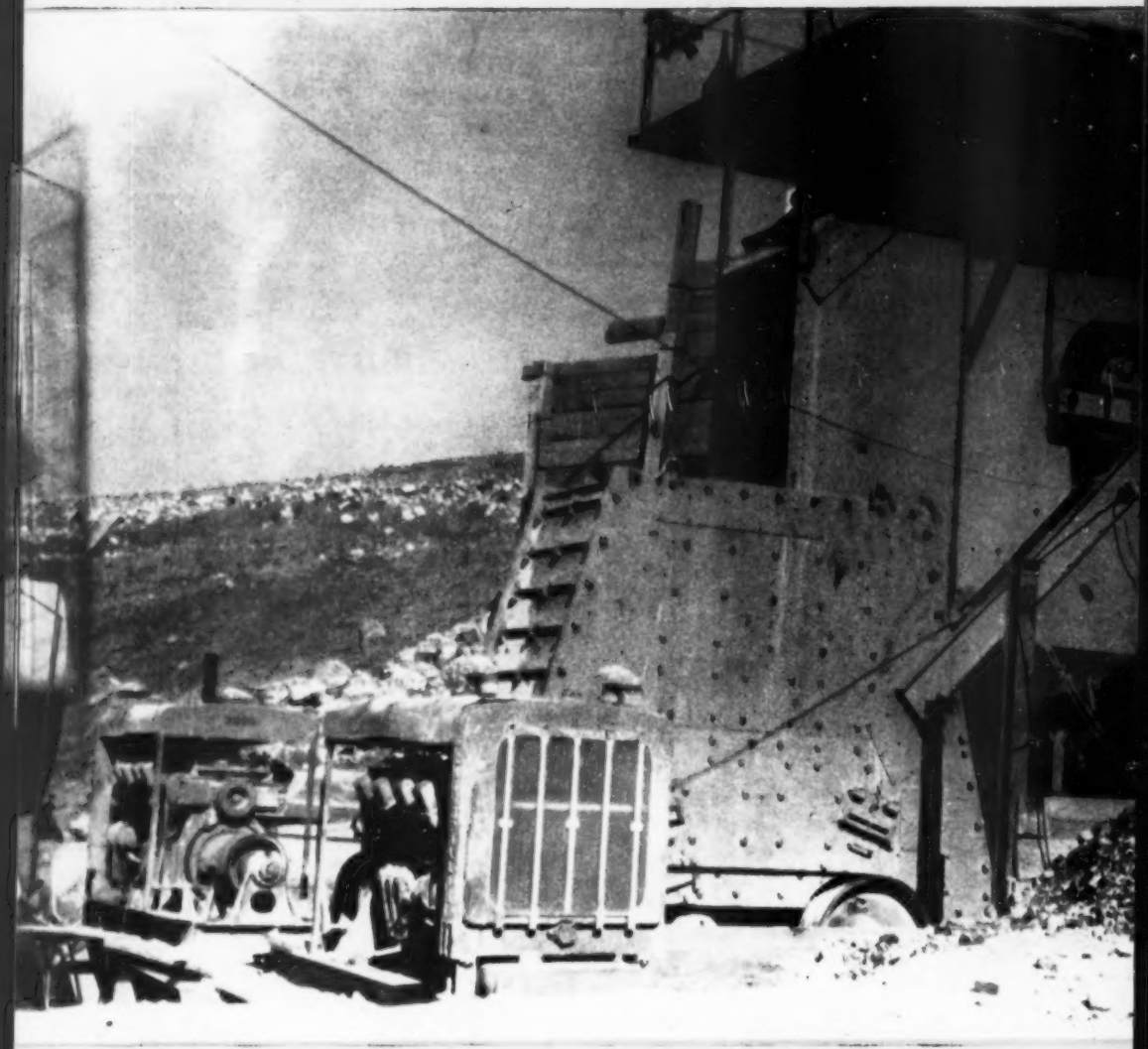

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Whether your job calls for 60 tons an hour... *or 600*... there's a Cedarapids aggregate plant that will turn out the exact quantity and quality you need, at the lowest possible cost per ton.

As a typical example, check the figures of this Concrete Materials & Construction Co. plant, with the Cedarapids 5050 Double Impeller Impact Breaker...

- ✓ **Originally scheduled to produce 400 tons per hour.**
- ✓ **600 tons per hour daily average maintained!**
- ✓ ***724 tons per hour peak production average!***

And here's why you get such low production costs with Double Impeller Impact Breakers...

- ✓ ***Maximum* output of cubical shaped aggregate required in so many specifications.**
- ✓ **Approximately 50% less contact of stone on metal, because such a high percentage of material is broken in suspension.**
- ✓ **You get an extremely high ratio of reduction at extremely low power costs.**
- ✓ **You save on your plant investment because you can eliminate much accessory equipment such as secondary crushers, conveyors, hoppers, screens, elevators, etc.**

Get ready for your share of the big jobs ahead with a Cedarapids Double Impeller Impact Breaker in your plant. "Construction Unlimited" means OPPORTUNITY UNLIMITED for you when you're prepared for bonus production. You can get very prompt delivery on all four sizes of Double Impeller Impact Breakers. See your Cedarapids distributor today for a profitable future.

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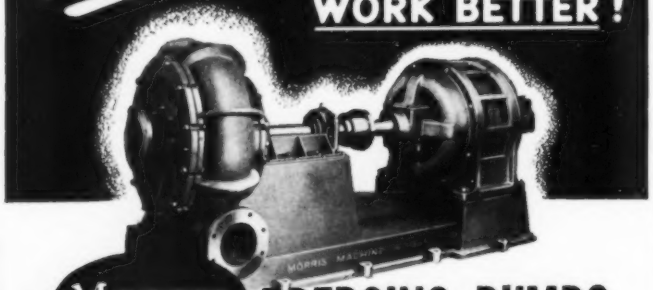

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In almost any dredging operation... *they give greater performance at lower maintenance cost*

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- The proper relationship between shell and impeller designs produces smooth, easy flow of materials . . . without eddies, turbulence or excessive friction losses. This feature alone reduces wear, abrasion and power consumption.
- When long service finally requires renewal of a part, replacement on the Morris Dredging Pumps can be made easily, quickly and economically . . . *with only slight interruption of service.*

Morris Will Build a Dredge for Your Particular Job . . .

- All the components of the dredge—hull, rigging, hoist, spuds, ladder, ladder head, and cutter will be designed and built for the individual type of deposit and service you require. All excavating and auxiliary pumps are of the famous Morris Centrifugal type . . . driven by electric, Diesel or steam power, according to the needs of your job.

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MORRIS CENTRIFUGAL PUMPS

Allegheny Ludlum Steel Corporation has announced the appointments of John E. Groves as director of industrial relations and Ralph L. Ostrander as manager of labor relations.

James H. Ingersoll, former assistant to the president of the Ingersoll Products Division of Borg-Warner Corporation, Chicago, has been elected vice-president of the division.

Mr. Ingersoll started with the company in 1937, and since 1945 has been with the Ingersoll plant in Chicago serving in various capacities.

George W. Mace, advertising manager of the Unit Crane and Shovel Company, Milwaukee, Wis., died of a heart attack recently. Mr. Mace was at work when he became ill and was taken to a hospital. He died within two hours.

Mr. Mace was well known in advertising circles in Milwaukee and elsewhere.

The appointment of James H. McMillen as Western District sales manager of the Multiwall Bag Sales Division, St. Regis Paper Company, has been announced. This area includes California, Washington, Oregon, Arizona, New Mexico, and Nevada. Headquarters are in the company's Los Angeles office at 530 West Sixth Street.

The Howe Scale Company, Rutland, Vt., has announced appointments of branch managers in three sections. Jack H. Brewer has been named manager of the Minneapolis branch at 404 Washington Avenue, N., Minneapolis 1, Minn. This branch serves Minnesota, northwestern Wisconsin, northwestern Iowa, North Dakota, South Dakota, and western Montana.

O. B. Collins formerly of the Houston, Tex., branch, was named manager of the Atlanta branch at 685 Stewart Avenue, S.W., Atlanta 3, Ga., which covers Georgia, South Carolina, Florida, Alabama, and southeastern Tennessee.

Lierd E. Grant, manager of the San Franscico branch has been named manager of the Los Angeles branch as well. The Los Angeles territory includes southern California, Arizona, western New Mexico, and the El Paso region of Texas. William J. Tucey was named assistant branch manager at San Francisco.

The Chicago branch of the Howe Scale Company of Rutland, Vt., has moved into larger quarters at 1915 N. Harlem Ave., Chicago 35, Ill. In charge of the Chicago branch is Curtis B. Hoffman. This office serves northern Illinois, northern Indiana, eastern Iowa, Wisconsin, and western Michigan.

John P. Roberts, 43, assistant general manager of The Timken Roller Bearing Company, Service Sales Division, was killed in an automobile accident near Spruce Pine, N.C., on September 19. P. T. Ancarrow, Atlanta Division manager, and W. L. Walthall, a salesman with the company, were seriously injured in the same accident.

C. E. Wilson

Charles Ebem Wilson, sales vice-president of the Worthington Pump and Machinery Corporation, Harrison, N. J., has been appointed a West Coast consultant on sales problems. In 1946 Mr. Wilson, in addition to his other duties, was made president of the Worthington-Gamon Meter Corporation, a Worthington subsidiary.

Mr. Wilson will retire from his present position and activities in corporation affairs, but will continue in a consulting capacity on sales problems at Worthington's offices in Los Angeles, San Francisco, Seattle, and Salt Lake City.

H. K. Porter Company, Inc., Pittsburgh, Pa., has acquired the Buffalo Steel Company, Tonawanda, N.Y., producers of light steel products, it was announced by T. M. Evans, president.

Buffalo Steel Company, which has a total capacity of more than 70,000 tons a year, is a manufacturer of concrete reinforcing bars, agricultural shapes, fence posts, shelving angles, merchant bars, and similar steel items.

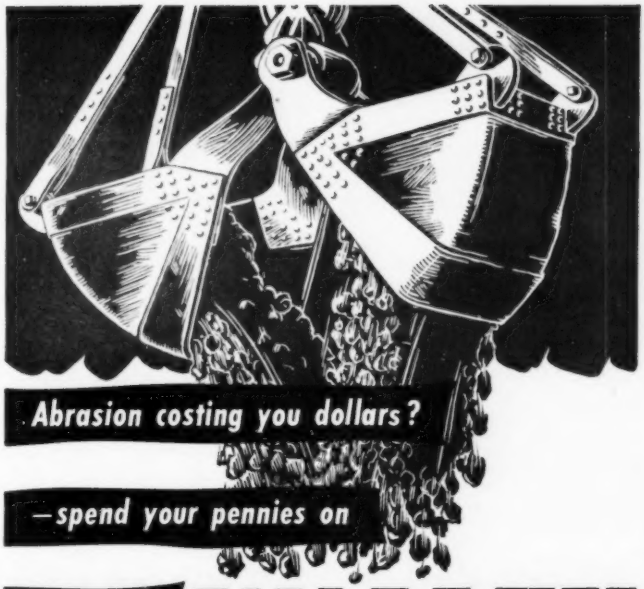
The acquisition of Buffalo Steel serves the northern market, Mr. Evans pointed out, and forms a natural combination with subsidiaries serving the South. Porter makes industrial rubber products, high voltage electrical equipment, oil field equipment and industrial and railroad springs.

William V. Shakespeare has been appointed sales manager of the Thor export sales division, it was announced by Independent Pneumatic Tool Co.

Mr. Shakespeare, whose headquarters will be in the Thor export offices at 330 W. 42nd Street, New York City, has been a field engineer in the division for the last 15 years. He has traveled in all Latin American countries, North Africa, and the Middle East as a Thor representative.

L. K. Stringham has been appointed chief engineer for The Lincoln Electric Company, Cleveland, O. For the last two years he has been director of Welding development. He is a member of the board of directors of The Lincoln Electric Company, a member of the NEMA Navy Committee for the development of low hydrogen electrodes, and a member of A.W.A.-A.S.T.M. committee for filler metal.

C. W. Bryant has been appointed manager of the purchasing section of the General Electric's Materials and Purchasing Department, it was announced recently. Mr. Bryant, former purchasing agent of ferrous products, will assume responsibility for the purchasing of all materials used throughout the company.



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WALLEX is a new hard-facing alloy made to resist the abrasion of earth moving and rough material handling and crushing equipment. WALLEX also has good impact and corrosion resisting properties. It comes as welding rods. Weldors will find it works fast—it is the easiest rod to use of its kind. Special castings of WALLEX are also available.

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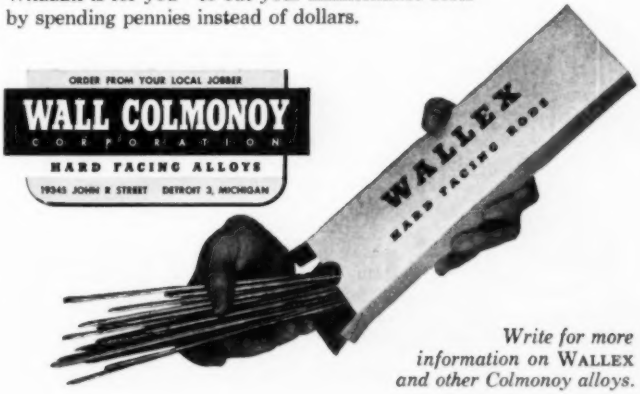

Write for more information on WALLEX *and other Colmonoy alloys.*

A. F. Kramer

Arthur F. Kramer has been appointed to a new post in field research on sales promotion and sales training problems for the Hyster Company, Portland, Ore.

Mr. Kramer had been an administrative assistant in the general sales department, and previously had been a salesman in the Arkansas-Tennessee territory.

Emmet C. Thompson, who rose from superintendent of a plant to general manager of the Grasselli Chemicals Department during his 43-year career with the Du Pont Company, has retired, according to an announcement from the company.

Clark W. Davis, assistant general manager of the Grasselli Chemicals Department since 1942, has been named to succeed Mr. Thompson as general manager.

Five promotions in the general sales department of Caterpillar Tractor Co., Peoria, Ill., have been announced.

C. E. Jones, formerly manager of the Sales Development Division, is now parts manager in charge of planning and development work for the parts department. George P. Fenn, former assistant manager of sales development, was named manager of the division, while Robert D. Evans, the division's supervisor of tractor and equipment operation, was appointed assistant manager.

Changes in the Central Sales Division concern John M. Abbey, who transfers from assistant sales manager of that division to assistant sales manager, Industrial Division, and N. F. Sattem, presently a district representative, who will replace Mr. Abbey as the assistant sales manager of the Central Division.

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STATEMENT OF OWNERSHIP

Statement of the ownership, management, and circulation, required by the Acts of Congress of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) of PIT AND QUARRY, published monthly at Chicago, Illinois, for October 1, 1951.

1. The names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Complete Service Publishing Company, Chicago Ill.; Editor, W. E. Trauffer, same; Managing Editor, W. E. Trauffer, same; Business Manager, James E. Montgomery, same.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

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3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown about was. . . (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

JAMES E. MONTGOMERY,
Signature of Business Manager.

Sworn to and subscribed before me this 24th day of September, 1951.
(SEAL) FRANK J. CORNYN.
(My commission expires Sept. 5, 1954.)

During the 1951 metal and nonmetallic mineral mining convention of the American Mining Congress at Los Angeles held October 22,23, and 24 a party traveled by bus to the Riverside Cement Company's operation at Crestmore, Calif., the Kaiser plant at Fontana, and the Irwindale plant of the Consolidated, Rock Products Company at Azusa. On another day a trip was made to the American Potash and Chemical Corporation's plant at Trona.

legal decisions

By Leo T. Parker
Attorney at Law
Cincinnati, Ohio

Recently a reader asked this important legal question: "I own nearly one-half of the stock in a corporation. The other owners of the stock and myself are now having a grave argument and differences of opinion as to conduction of the corporation's business. Can I have the corporation dissolved and receive the actual value of my stock instead of selling my stock on the open market at a price considerably less than I can get if the corporation is dissolved?"

According to a late higher court decision, the answer is yes. In other words, where differences between two equally-divided factions in a corporation are irreconcilable and the dissensions between them incurable so as to make the continuance of the corporation unprofitable to its shareholders, the court has the authority to dissolve the corporation, whereby the stockholders may receive actual value of their stock.

For example, in *Freidheim v. Hedberg-Friedheim and Company*, 47 N. W. (2d) 424, the testimony showed facts as follows: The Hedberg-Freidheim and Company is engaged in the production and sale of sand, gravel, and concrete blocks. The corporation was organized April 1, 1922, for a period of 30 years, so its charter will expire April 1, 1952. It has 282 shares of stock issued and outstanding, of which Charles Freidheim and his wife own 141 shares and Fred Hedberg and his wife also own 141 shares. These holdings represent the entire stock of the corporation. The corporation has two subsidiary corporations. It owns all the stock of the Hedberg-Freidheim Contracting Company and the McGowan Contracting Company.

Freidheim and his wife filed suit and asked the court to dissolve the corporation on the grounds that the two families were so deadlocked that the business of the corporation could no longer be conducted with advantage to either family. There was internal dissension between the two families. Hedberg is president and in control of the corporation and has been guilty of mismanagement and abuse of authority, and although the corporation is solvent and has prospered financially from its operations in the past, depletion of its assets and irreparable damage will result if the corporation's business is carried on.

The higher court held that these matters justified dissolution of the corporation, saying:

"It is alleged that due primarily to the increased demand for gravel, sand, and concrete blocks brought about by the intensive building program heretofore existing in this area, the corporation's business, notwithstanding the dissension and deadlock between the two factions, has prospered financially in the past. Where differences between two equally-divided factions in a corporation are irreconcilable and the dissensions between them incurable, so as to make the continuance of the corporation unprofitable to its shareholders, the court is expressly given the power and discretion to dissolve the corporation on that ground alone."

Purchaser Keeps Name Secret

According to a late higher court decision, if a company buys real property without disclosing that the company is

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For your own satisfaction, before you buy, compare any other 1 cu. yd. shovel with a General Model 420 like this one speeding output at Mayville White Lime Works, Mayville, Wis. Check the features . . . instant, velvet-smooth Air Control of hoist, swing, steering, swing brake, crowd, retract, and dipper trip . . . patented Air Cushion Clutches that automatically compensate for gradual wear on clutch linings . . . Independent Travel with two speeds forward, two reverse . . . Independent Boomhoist . . . rugged outside dipper handles . . . powerful Diesel or gasoline engine . . . quick conversion to dragline, crane, clamshell, or hoe . . . and many other advantages. Then ask yourself which machine gives you more for your money.

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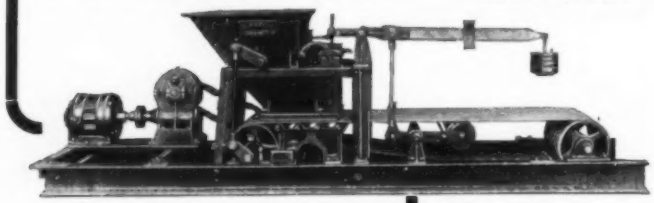

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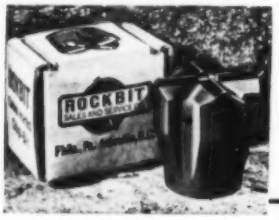

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the buyer, the seller may rescind the contract.

For example, in *A.G.L. & P.C. Company v. W.*, 238 S. W. (2d) 368, the testimony showed facts as follows: The cement company operates quarries and kilns and manufactures lime and cement. The company was desirous of acquiring "additional rock reserves" and its executive vice-president authorized M., a real estate salesman to buy certain farm property for $60,000. The vice-president's instructions were "not to disclose the identity of A.G." Later the real estate dealer contacted W., the owner of the farm land, and told him that an elderly person of means would buy the property as an investment and he would probably run beef cattle on it.

Not knowing that the cement company was the real buyer, W. signed a contract to sell his farm land for $60,000. When he learned that the cement company was the buyer, he filed suit to rescind the contract. The higher court held in favor of W., and said:

"It is a general doctrine that, if either party to a transaction conceals some fact which is material, which fact is within his own knowledge, and which it is his duty to disclose, he is guilty of fraud. M. deceived and misled defendant (W.). The statements may have been thought by him to be merely clever ways to induce the sale and yet follow the instructions of his principal. But his statements were at least constructively fraudulent."

This court explained further that a seller is not bound to disclose all facts which, if known by the buyer, would prevent or tend to prevent his making the purchase. On the other hand, if the purchaser not only remains silent but makes any statement which tends to a suppression of the truth, or to a covering up or disguising the truth, or to a distraction of the seller's attention or observation from the real facts, then the line is overstepped, and the concealment becomes fraudulent, which entitles the seller to rescind the contract.

Employee Works in Street

Considerable discussion has arisen from time to time over the legal question: "Is an employee legally bound to watch for motor vehicles while working in a street? Also, can the employee recover compensation for an injury while not watching?" The answer to the first question is no, and to the last question, yes.

For example, in *Pacific Portland Cement Company v. Bellamy*, 187 Fed. (2d) 701, an employee was struck by an automobile and injured while working in a street. The higher court held that there is no duty imposed on a workman to be constantly on the lookout for motor vehicles. On the contrary, it is the duty of drivers of vehicles to observe the street laborers and to avoid injuring them. The court said:

"It is not negligence as a matter of law for (such) a workman to keep his mind on his work or to fail to look and listen for approaching vehicles. He may properly assume that the automo-

bilist will not be guilty of negligence in running him down without warning."

Negligence Not Inferred

Recently a higher court held that an employer is not liable for an injury to an employee unless the testimony proves that the injury resulted from negligence of the employer.

For illustration, in *Risberg v. Duluth, Missabe and Iron Range Railway Company*, 47 N. W. (2d) 113, the testimony showed facts as follows: The Zenith Dredge Company owns and operates a large rock quarry. A network of railroad tracks is laid out on its property. The quarry is equipped with a steam locomotive and a self-propelling diesel-powered locomotive crane. One day an employee was switching cars loaded with rock and attempted to use a brake club through the brake wheel to pull up the notches on the rachet wheel of the brake to stop the car. However, the car kept going faster, gaining speed all the way. The brake had no effect on the car. The car ran about 380 ft. and then struck other loaded cars. The employee was badly injured.

In subsequent litigation the higher court refused to award the employee any compensation, saying:

"The car had been spotted on a heavy downgrade. It was loaded with cover rock with an overload of 4,500 lb. In the absence of a brake failure, the control of the car against the strong gravity downgrade pull was in the hands of plaintiff (employee). It is a more reasonable probability that this accident occurred because plaintiff (employee) failed to tighten the brake before the overloaded car gained too much momentum than that it was due to any neglect on defendant's (employer's) part which might otherwise be inferred from the mere happening of the accident."

For comparison see *Heffter v. Northern States Power Company*, 217 N. W. 102. This court held that before an injured employee may recover damages from his employer, he must prove all of these three things: The employee was injured by an apparatus or instrumentality whose nature is such that injury is not ordinarily to be expected in the absence of the employer's negligence; at the time of the injury the equipment was in the exclusive control of the employer; and the injurious occurrence was not due to any voluntary action or negligence of the employee.

Blasting Liability

Recently several readers asked this question: "When and under what circumstances is a company liable for damage to private property caused by blasting operation?"

This question was before a higher court in *Whitman Hotel Corporation v. Elliott and Watrous Engineering Company, Conn.*, 79 A. 2d 591. In that case the court decided that if a company which discharges dynamite or explosives and obviously exposes the property of another to the danger of probable injury, such company is absolutely liable, irrespective of negligence, for damage

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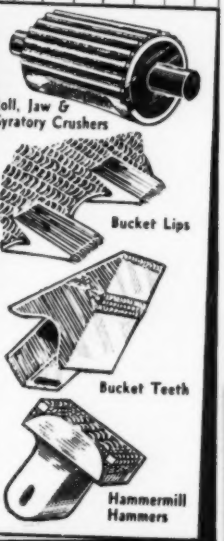

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caused by the blast, whether the damage ensues from the hurling of debris or from vibrations or concussion.

In other words, if a jury will decide that a person reasonably careful and experienced in doing blasting would *not* have discharged the blast which caused the injury, then, under these circumstances, the company is liable.

Also, see the late case of *Antinozzi v. D. V. Frione and Company, Inc.*, 79 Atl. (2d) 598. The testimony in this case showed that a contractor was constructing a highway in the immediate vicinity of greenhouses. He carried on blasting operations which caused damage by flying fragments of rock and derbis, as well as by concussion and vibration.

The jury decided that a reasonable, prudent person experienced in blasting would not have caused damage to the greenhouses and, therefore, held the contractor liable. The higher court approved.

Gravel Taken From Cemetery

According to a late higher court decision, a county or township board may remove gravel from a cemetery for public improvements.

For illustration, in *Huse et al. v. Snodgrass et al.*, 47 N. W. (2d) 696, it was shown that a township board of health acquired title to certain real property which was made a part of a cemetery. At a meeting of the township board the following resolution was adopted: ". . . that we furish gravel and spread on East China Township Highway where needed for repair, this gravel to be taken out of the rear end of the cemetery".

In subsequent litigation the higher court held that the board of health was within its legal rights in authorizing a contractor to remove gravel from the cemetery, and said:

"No burials had been made in the rear end of the cemetery, and it is still unused and unimproved land. The grave nearest the excavation is about 100 feet away. There is no evidence that the board illegally sold any gravel or that any cemetery gravel was used by the board for private purposes."

Unreasonable Ordinance

All higher courts agree that municipalities may adopt zoning ordinances as an exercise of their police power and thereby may impose a *reasonable* restraint upon the use of private property. However, a zoning ordinance must have a real, substanial relation to the public health, safety, morals or general welfare. Otherwise the ordinance is void.

For example: in *Skokie Corporation v. Village of Skokie et al.*, 97 N. E. (2d) 310, the testimony showed facts as follows: A corporation leased, with privilege of purchase, an 18-acre tract of land in an area zoned as an "H" industrial district. The testimony showed that one Riley, who was a zoning expert and city planner by profession, considered that the protection of industrial districts was a proper element for zoning and that the intended location of the corporation's plant would have an adverse effect upon the surrounding industries traffic-wise. Therefore, the city adopted an ordinance prohibiting the intended plant in an "H" district.

The corporation filed suit and asked the court to compel the city officials to issue a building permit for construction and operation of its plant on the 18-acre tract.

During the trial the counsel for the corporation urgued that the new zoning ordinance was not based upon any considerations of public welfare or safety or health or morals, but that such refusal was arbitrary, capricious, and wilful. The higher court agreed and ordered the city officials to issue a permit and said:

"The passage of the ordinance, after plaintiff's (corporation's) application for a building permit had been denied, led to the unescapable conclusion that suddenly and without any reasonable explanation the amendment was adopted for the express purpose of outlawing an admittedly lawful business. We conclude that the passage of the amendment to the zoning ordinance of the village was unreasonable, arbitrary, and had no firm basis in, or relation to, the public health, morals, safety or public welfare."

Salesman Exceeds Authority

According to a late higher court decision, all persons are expected by law to read and know details of contracts they sign. Another important established rule of the law is that a purchaser of non-metallic products cannot vary or be excused from obligations assumed in a written contract, although he intro-

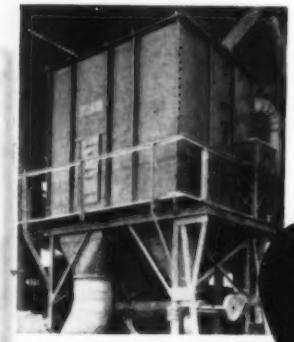

Illustration above shows a Sly Dust Filter in the pack house of a cement plant. Several dust pipes enter the fan side of the filter. The exhaust fan is located on the floor below filter. A screw conveyor automatically and continuously removes the collected cement.

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Sly Dust Filters collect dust generated in such operations as crushing, grinding, screening, conveying, loading, separating, and mixing — Saving valuable materials, adding to net income.

Sly Filters are saving money for their users by providing cleaner plants, better working conditions, greater production, less cleaning up (interiors, roofs, surroundings, etc.), and cleaner products, which sell better. Thousands of installations.

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Sly Dust Filters get all the dust by filtration through cloth. They offer you:

1. Greater filtering capacity because of more filtering cloth.
2. Taut bags (patented) save power and improve dust removal.
3. Bags more easily replaced.
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duces testimony proving that the seller's salesman made *oral* promises which contradict the written contract. This is especially true if the written contract contains a clause that oral agreements made by salesmen are not binding, or that the order given by the purchaser is not a contract until accepted by the manufacturer.

For illustration, in *Portland Cement Company v. Whitmore*, 150 S. E. 607, it was disclosed that a salesman employed by a cement manufacturer obtained a written order for two carloads of cement, signed by the purchaser. The order blank had printed thereon: "Orders are not binding on this company unless accepted by the general office".

When controversy developed over payment for the cement, the manufacturer filed suit and the purchaser attempted to avoid liability by proving that the salesman had promised that he would allow the purchaser 20 cents per barrel for unloading, hauling, storing, and reloading the cement into the purchaser's trucks.

However, the higher court indicated that the purchaser could not rely on the salesman's verbal promise, saying:

"The defendant company (purchaser) had notice from the order blank itself that the agent did not have authority to contract, but only to accept orders. But, even had he had such authority, because the defendant (purchaser) has signed the written order, the law presumes that all preliminary negotiations were included and merged in the writing. The order in the present case was clear on its face and contained no notation suggesting any other understanding than that contained thereon."

Must Be Clearly Proven

All courts agree that a purchaser has the burden of proving the contents of his *alleged* verbal contract.

For example: in *Continental v. Baker*, 238 Ky. 265, the higher court held that one who alleges an oral contract cannot win a suit unless he "clearly and convincingly establishes in every particular" the details of the alleged oral contract. This court also held that when the evidence shows an indefinite, incomplete, or conditional oral agreement, there is no binding contract.

Also, see *Globe v. Eureka*, 151 So. 827. This higher court held that one who alleges a verbal contract has the burden of proving his contentions in all and every detail, and he must establish the proof by disinterested witnesses who heard the verbal conversation and agreement.

For comparison, see *Robinson v. Franklin*, 35 S. W. (2d) 635. Here the higher court held that a verbal contract is valid and enforceable if the complaining party proves all the necessary elements of a valid contract by disinterested witnesses.

Valid Contract

Considerable discussion has arisen from time to time over the legal question: "What is the legal difference between a valid contract of sale and a lease contract?" According to a late higher court decision, a contract of sale

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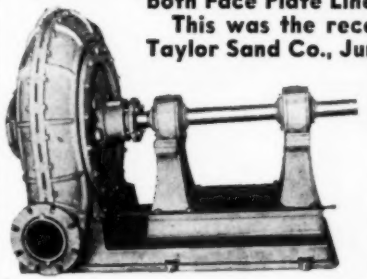

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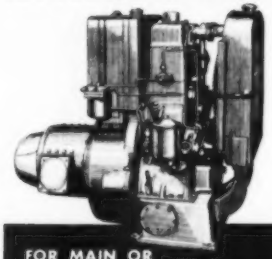

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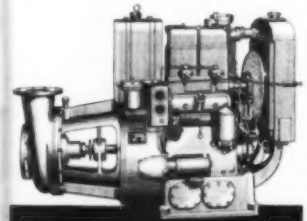

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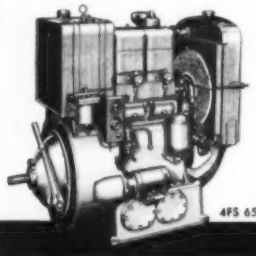

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is an agreement whereby *for a specified price* a purchaser is entitled to legal ownership of the item or equipment specified in the agreement, whereas a lease contract gives the purchaser or user only *temporary* control over the subject of the lease.

For example, in *Fullwood v. Catsman*, 44 N. W. (2d) 898, the testimony showed facts as follows: A contractor named Catsman agreed to sell to one Fullwood a used Chevrolet truck for $2,650. Fullwood paid $500 down on the purchase price and the balance of $2,150, plus interest $102, was to be paid at the rate of $50 per week, to be deducted from certain weekly earnings of Fullwood. Fullwood installed a concrete mixer on the truck, for the purpose of delivering Redi-Mix concrete for Catsman, who was also engaged in the Redi-Mix concrete business. Fullwood agreed to use the truck and mixer exclusively to deliver ready-mixed concrete for Catsman, for which Fullwood was to receive an agreed price per yard for delivery of the mixed concrete.

The truck and mixer were used by Fullwood for hauling mixed concrete for Catsman, who deducted from Fullwood's earnings for delivering the concrete, until the balance of the purchase price of the truck and interest had been paid in full. A disagreement arose between Catsman and Fullwood. At this time Catsman had never delivered to Fullwood a certificate of title for the truck. Fullwood several times demanded the certificate and Catsman refused it, claiming that their agreement was one of employment or lease, not of sale.

In subsequent litigation the lower court held the agreement between Catsman and Fullwood a valid contract of sale and ordered Catsman to deliver a certificate of title to the truck to Fullwood. The higher court approved the verdict, saying:

"Plaintiff (Fullwood) has paid for the truck in full. Catsman now has the truck, the money, and the title, which he has refused to transfer to plaintiff. The court properly entered judgment for the plaintiff (Fullwood) for the full amount paid by plaintiff to defendant for the truck."

Arbitration Contract

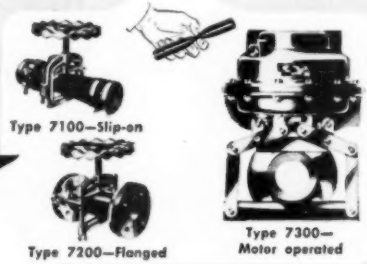
A contract is valid which contains a clause that disputes must be settled by arbitration.

For example, in *Newark Company v. Local* 680 *of International Brotherhood of Teamsters*, 78 Atl. (2d) 839, there existed a collective bargaining agreement between an employer and a union which provided that all disputes arising under or in connection with anything not expressly provided in the agreement shall be submitted for arbitration.

In subsequent litigation the higher court held the contract valid and said that all disputes between the employer and the union must be settled by arbitration. The court said:

"Submission to arbitration is essentially a contract; the parties have a right to stand upon the precise terms thereof."

if it Flows . . .



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traffic news

CENTRAL TERRITORY RAILROADS FREIGHT TRAFFIC COMMITTEE

Docket 88467 (1)—Proposed to establish on crushed stone, stone screenings and agricultural limestone, carloads, in open-top cars, minimum weight 90 percent of the marked capacity of car from Speed, Ind., to Southern Railway (Indiana) stations, following rates:

From Speed, Ind., to	In Cents per Net Ton, Subject to ExParte 175
Evansville, Ind.	1.50
Stevenson, Ayrshire, Mine No. 8, Oakland City, Princeton, Cannelton, and Rockport	1.40
Huntingburg, Velpin, Winslow, Lincoln City, Gentryville, and Johnsburg	1.30

Docket 88469 (2)—Proposed to establish on crushed stone, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Monon, Ind., to various Michigan destinations shown below:

	Proposed Rate in Cents per Net Ton
Cedar Springs, Pierson, Sand Lake, and Howard City	2.19
Reed City, Orono, and Ashton	2.31
Morley and Stonewood	2.26
Big Rapids and Paris	2.28
Leroy and Tustin	2.33
Cadillac	2.38

(Not subject to ExParte 162, 166, 168, but subject to ExParte 175-A.)

Docket 88472 (2)—Proposed to establish on crushed stone, in bulk, in open-top cars, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Maumee, O., to Selfridge Aviation Field Siding, Mich., 183 cents net ton.

Docket 88473 (2)—Sand and gravel, in open-top cars, as described in N.Y.C. 1908-A, ICC 1198, carload minimum weight as indicated therein. Establish rates from Ginger Hill and Rupel, Ind., to representative points in Illinois, Indiana, and Michigan. Rates as shown in Exhibit A. Routing: Present routing to apply.

EXHIBIT A

From Ginger Hill and Rupel, Ind., to	Rates in Cents per Net Ton
Chicago, Ill.	1.38
Danville, Ill., Liverpool, Ill.	1.39
Joliet, Ill.	1.69
Manteno, Ill.	1.50
Allison, Handy, Kentland, and Wanatah, Ind.	1.23
Cook, Ind.	1.01
New Buffalo, Mich.	1.09
Rensselaer, Ind.	1.65

Rates include all increases with the exception of X-175.

Docket 88479 (2)—Proposed to establish a rate of 221 cents per gross ton on stone, fluxing, furnace or foundry, melting or refractory, unburned, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full visible capacity, actual weight will apply from Romona, Ind., to Cincinnati, O.

Docket 88483 (1)—Proposed to establish on slag, crushed or crushed commercial (other than granulated) in open-top cars, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Ashland, Ky., to Dayton, O., 201 cents net ton.

Docket 88485 (2)—Limestone dust in paper bags, closed cars, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Thornton, Ill., to Millers, Mich., 149 cents per net ton. Rates subject to ExParte 162, 166, 168 and 175 increases.

Docket 88490 (2)—Crushed stone, in bulk, in open-top cars, carload minimum weight marked capacity of car from Speed, Ind., to Louisville, Ky., 83 cents per net ton. To expire one year from the effective

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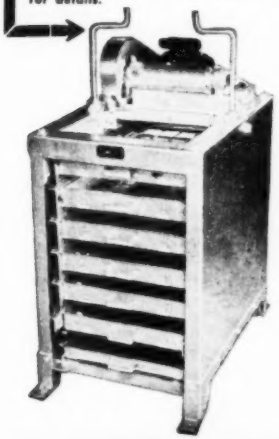

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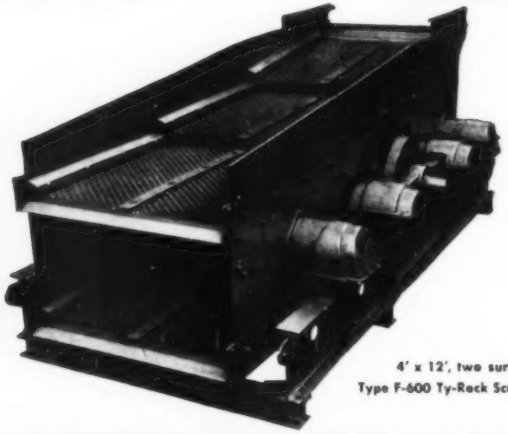

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date, unless sooner changed, cancelled, or extended.

Docket 88491 (I)—It is proposed to establish a rate of 207 cents per net ton on crushed stone, in bulk, in open-top cars, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Rimer, O., to Center Line, Mich., 207 cents per net ton.

Docket 89502 (I)—Proposed to establish on crushed stone, in bulk, in open-top cars, carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from North Baltimore, O., to Center Line, Mich., 189 cents net ton.

GENERAL FREIGHT TRAFFIC COMMITTEE—Eastern Railroads

Bulletin G-4681 (Shipper)—Limestone, pulverized, containing more than 3 percent but not more than 30 percent of added minerals, carload, minimum weight 60,000 lb. from Limecrest, N. J., to destinations in Official Classification Territory at 15 percent of first class, subject to ExParte 175 increase.

Bulletin G-4702 (Carrier)—Plaster and gypsum products, as described in note 10, New York Central Freight Tariff 1608-A, ICC No. 127, from Gypsum, Marblehead, Martin, and Port Clinton, O., to Addison and South Addison, Ill., (a) 19 cents per hundredweight and (b) 18 cents per hundredweight, subject to all increases. (a) minimum weight 40,000 lb. (b) minimum weight 60,000 lb.

COLORADO-WYOMING COMMITTEE

Docket X-174 (Carrier)—Sand, gravel and crushed stone, carloads, minimum weight 90 percent of marked capacity of car, from Golden, Colo., to Ladora, Colo. Proposed: $1.17 per ton of 2,000 lb., not subject to ExParte 162-6-8 increases, to apply only on Colorado intrastate traffic and to expire one year from effective date.

ILLINOIS FREIGHT ASSOCIATION

Docket 511-1066—Agricultural limestone, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply, but not less than 60,000 lb., from Lehigh, Ill., to I.C. Railroad stations shown below:

From Lehigh, Ill., to	Rates in Cents per Ton of 2,000 lb. Present	Proposed
Greenup, Wheeler, Newton, Boos, and oblong, Ill.	124	114
Dieterich and Dundas, Ill. (Including X0162-166-168 increases and subject to X-175 increase.)	138	114

Note: Proposed rate will be published as truck competitive rate and will be subject to an expiration date of one year from date of publication.

Docket IRC 511-1084—Stone, crushed, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Pontiac and McDowell, Ill., to Springfield, Ill. Present: $1.39 per ton of 2,000 lb. Proposed: $1.23 per net ton. Not subject to increases per X-162, X-166, X-168, but subject to X-175-A.

NORTH PACIFIC COAST FREIGHT BUREAU AND PACIFIC SOUTHCOAST FREIGHT BUREAU—Joint Docket

Docket JT-1773 (S)—Request for rate of 58 cents per hundredweight on lime, dolomite, carload, from Dolomite, Utah, to Port Angeles, Wash., subject to X-175, minimum 50 tons, subject to expiration date of March 30, 1952.

Docket JT-1779 (S)—Stone, natural, rough quarry, carload, Winnemucca, Nev. Request rates 52 cents per hundredweight to Seattle and 64 cents hundredweight to Spokane, Yakima, Wenatchee, and Bellingham, Wash., minimum 50 tons. Item 9990 Pacific Southcoast Freight Bureau 1-S.

NORTH PACIFIC COAST FREIGHT BUREAU DOCKETS

Docket NC-2174 (S)—Requested to establish on limestone, carload, Quarries Spur, Wash., to Irvin, Wash., 8½ cents per hundredweight in open cars and 9 cents in closed cars.

MONTANA LINES COMMITTEE

Docket A-419 (Shipper)—Proposed to establish on lime, common, including magnesium lime, hydrated, quick or slaked, carloads, from Sloan and Henderson, Nev., to points in Montana. Present: Various. Proposed: 48 cents, minimum weight 50 tons; 52 cents, minimum weight 40 tons; 56 cents, minimum weight 30 tons. Subject to X-175.

PACIFIC SOUTHCOAST FREIGHT BUREAU PROPOSALS

Docket 1231 (Republicized S)—Lime, common, carload, Salinas, Calif., to Tucson and Phoenix, Ariz. Request rate, $7.10 per net ton; minimum, 50 tons.

Docket 2177 (S)—Proposed to establish on lime, carload, from Sloan and Henderson, Nev., to Arizona. Request rate, 40 cents to Phoenix and 45 cents hundredweight to Tucson, Ariz., not subject to X-175, minimum weight, 20 tons.

Docket 2187 (S)—Stone, natural, rough, quarry, carload, from Winnemucca, Nev. Request rate of 43 cents to Los Angeles, Calif.; 67 cents to Phoenix, Ariz.; and 89 cents per hundredweight to El Paso, Tex.; minimum, 50 tons.

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 57793 (I)—Lime (calcium) that is, common lime, hydrated, quick or slaked, from Cleburn, Dittlinger, Houston, McNeil, Old Round Rock, Round Rock, and Velasco, Tex., to Chicago and Joliet, Ill., and Milwaukee, Wis. Establish rates of 50 cents, minimum 15 tons and 44 cents, minimum 25 tons to Milwaukee, Wis.; 49 cents, minimum 15 tons and 40 cents, minimum 25 tons to Chicago; and 48 cents, minimum 15 tons and 39 cents, minimum 25 tons to Joliet, Ill. Not subject to ExParte 162, 166 or 168.

Docket 57737 (Emergency) (I)—Limestone, from Marble City, Okla., to Koehler, N. M. Publish rate, $5.44 per net ton. Not subject to ExParte 162, 166 or 168 increases, carload.

Docket 58006 (X) (I)—Sand and gravel; also stone, broken, crushed or ground, from Hindman, Tex., to Clovis and Gallaher, N. M. Amend A.T.&S.F. 5645-Q by establishing rates in cents per net ton, not subject to ExParte 162, 166 or 168 increases, of $2.18 to Clovis and $2.26 to Gallaher, N. M.

TRUNK LINE TERRITORY FREIGHT TRAFFIC COMMITTEE

Docket TL M-1609 (Carrier)Stone, natural (other than bituminous asphalt rock), crushed, not otherwise indexed by name, in Official Classification, in open cars, carload minimum weight 90 percent of marked capacity of car from Bethlehem, Pa., to Parryville, Pa., 78 cents per ton of 2,000 lb. Subject to ExParte 175 increase, in lieu of $1.11.

Docket TL M-1637 (Shipper)—Fluxing lime, carload, not ground, in bulk, minimum weight 35 tons to Claymont, Del., from Bittinger, Thomasville, and York, Pa., $3.09 per net ton. Subject to ExParte 175 increase.

Docket Bulletin FTC 418—September 12

TL-M-1650—Stone, broken or crushed, carload minimum weight 90 percent of marked capacity of car, from Oriskany Falls, N. Y., to Walton, and Cadosia, N. Y., $1.54 net ton; Delhi, N. Y., $1.56 net ton and Wurtsboro, N. Y., $1.66 net ton, subject to ExParte 175 increase. Issued to meet motor truck competition.

Directors of Western Fertilizer Association, comprised of ten co-operatives, agreed to invest $15,000 in the association's phosphate mine in Maybie Canyon, northeast of Pocatello, Idaho. Marvin Allyn, president of the association, reported that a plant would eventually be built, probably near Soda Springs.

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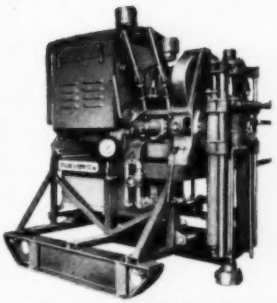

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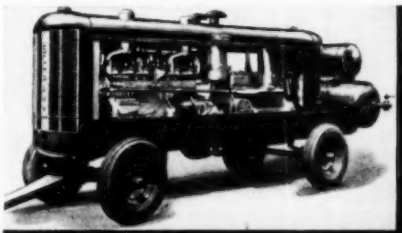
See our four-page insert in the Mining Catalogs



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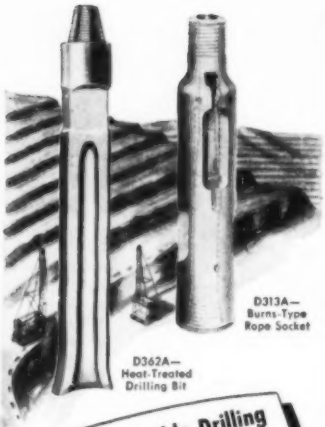

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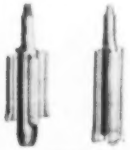

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Deserted Georgia Pyrite Mines May Replenish Sulphur Supply

Several long-abandoned pyrite mines in North Georgia may soon be re-opened in a nationwide search for sulphur, which is at present seriously short in supply for America's defense needs. Sulphur and sulphuric acid, the leading by-product of sulphur, are gravely needed for the production of heavy chemicals, explosives, petroleum, coal products, rubber, paper, rayon, film, and other vital items for defense.

The pyrite from these vacated mines is of sudden economic importance due to the fact that the ore, in its pure form, contains roughly 50 percent sulphur. Accordingly, pyrite is the next best source of sulphur to native sulphur deposits.

In the early part of this century pyrite ("fool's gold") was mined in Georgia chiefly because of its sulphuric content; but shortly after World War I, huge deposits of native sulphur were discovered in Texas and Louisiana. These deposits were purer in form and less expensive to mine and process, and therefore, the Georgia mines became economically impractical and were closed.

Subsequent decades of mining, particularly during World War II, have seriously depleted the supply of native sulphur, and with action in Korea spurring defense and therefore the production of sulphur, the abandoned Georgia mines once again are being explored for worthwhile pyrite deposits.

Capt. Garland Peyton, state geologist and head of Georgia's Department of Mines, believes there are between 2,000,000 and 3,000,000 tons of pyrite in the Georgia hills. He states that by next spring prospectors should know whether the Georgia deposits are worth reopening.

Second World Trade Fair Set for 1952 at Chicago

Chicago's International Trade Fair has been scheduled for the period from March 22 to April 6, 1952, at the Navy Pier, where 200,000 sq. ft. of space will be available. It is the second such event, the first having been held during August, 1950. At this first showing 2,200 exhibitors displayed the products of 44 nations. Among the new exhibitors expected at the 1952 fair will be representatives of firms in the Philippines and in Western Germany.

Serving on the staff of the Chicago International Trade Fair are I. S. Anoff, president; Col. J. N. Gage, vice-president and executive director; and Isidore Brown, treasurer.

The Potash Company of America, Carlsbad, N. Mex., reported an increase in earnings for 1950-51 (year ended June 30), as compared with the same period in 1949-50. The net income was declared at $2,707,140, equal to $2.44 a share based on net sales of $15,384,082, as compared with a net income of $2,532,864 or $2.29 a share on sales of $11,487,528 for the previous fiscal 12-month period.

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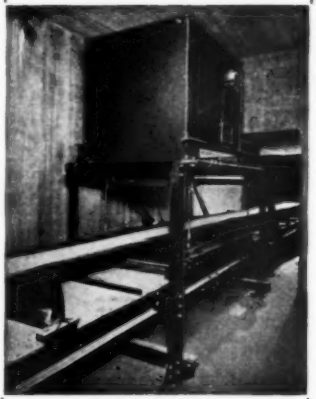

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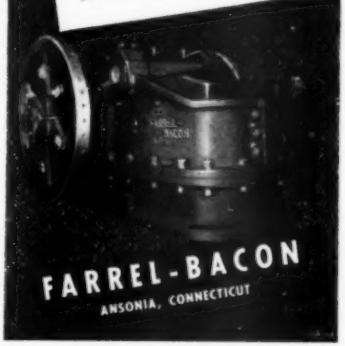

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Diesel-Electric Shuttle Car Approved by Mines Bureau

After exhaustive tests, the U. S. Bureau of Mines recently approved the first diesel-electric shuttle car for operation in noncoal mines. The Bureau's tests at the Central Experiment Station at Pittsburgh, Pa., determined that the equipment, if maintained and operated as prescribed by government specification, will not be harmful to the health of employees.

Approval of the diesel-electric shuttle car for noncoal mines follows the recent granting by the bureau of a "permissible rating" for a diesel haulage locomotive for use in coal mines. Bureau Director James Boyd pointed out that the "permissible" rating for the haulage locomotive for coal mines carries far more restrictions than that of the shuttle car for noncoal mines. Although regulations for the rigid testing of diesel-powered equipment in noncoal mines were published by the Bureau more than two years ago, the diesel-electric shuttle car was the first to pass the exacting examinations.

The approved shuttle car has a three-cylinder diesel engine which drives a generator. This generator, in turn, provides the power for two traction motors to drive the car and one motor to operate a conveyor in the car. Equipment of this type is designel to move ore from the working regions out of a mine or to other parts of the mine for transportation to the surface. Cooling of the exhaust gases to a safe point is accomplished by a "scrubber" using water. No provision is necessary to eliminate carbon monoxide from the exhaust because the small amount liberated by an approved diesel-powered machine can be diluted safely by adequate ventilation.

Bureau engineers said that a gasoline engine, on the other hand, could not be operated safely in a mine because of the large quantity of carbon monoxide it liberates. No gasoline engine ever has been approved by the Bureau for use in coal or noncoal mines, Mr. Boyd emphasized. In addition, diesel fuel does not present the fire hazard inherent in gasoline.

Among the restrictions attached to the use of the diesel-electric shuttle car, approved by the Bureau, are maintenance of adequate ventilation at all times, operation only in atmospheres which do not contain dangerous amounts of flammable gases, and frequent examinations of the surrounding atmosphere to determine what contaminants are present, and that they are not present in harmful amounts. The Bureau's approval also specifies that the diesel oil used to operate the engine must have a flash point greater than 140 deg. F.

The National Gypsum Company paid out $228,800 to employees and their families under the "packaged insurance plan" in the 12 months ended June 30, according to a statement made by Fred A. Manske, vice-president in charge of manufacturing.

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PROTECT YOUR WIRE ROPE with genuine American Hoist replacement sheaves. Same top quality used on all American Hoist cranes and other big name equipment. Complete stocks, all types and sizes. Prompt shipment from either St. Paul or So. Kearny plant.

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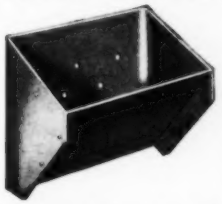

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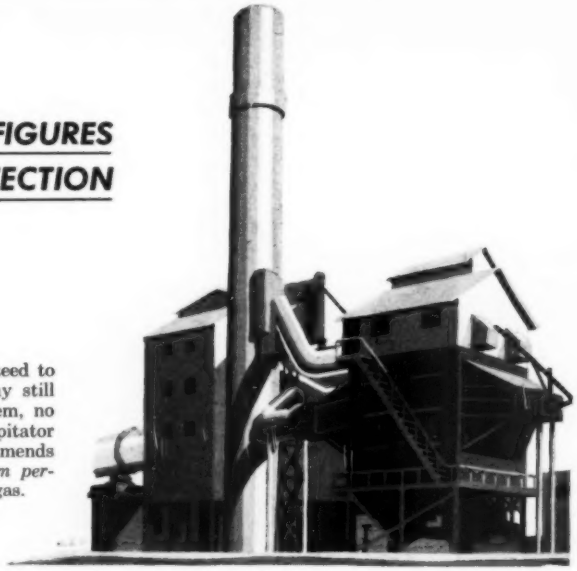

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Hundreds of Elex precipitators are in use today all over the world. Koppers-Elex electrostatic precipitators are designed, engineered, fabricated and erected under one contract by the Koppers Company . . . and each installation comes complete with Koppers packaged mechanical or vacuum tube power pack. If you have a gas-cleaning problem, write today! Koppers Company, Inc., Precipitator Dept., 381 Scott Street, Baltimore 3, Maryland.

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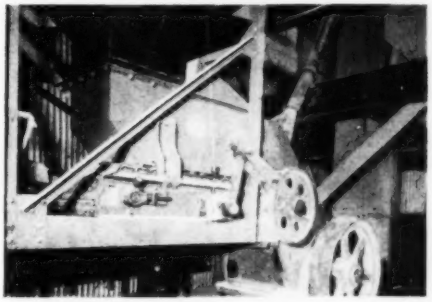
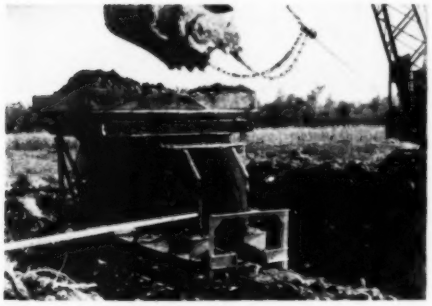
The Link-Belt Apron Feeder at right provides a uniform flow for smaller tonnages. Relatively short pitch chains and apron pans are employed. The drive is arranged to provide easy adjustment of feed to the crusher, permitting great flexibility to meet varying operating conditions.





FOR SMOOTH, UNIFORM FLOW

Smooth operation and uniform discharge are assured with Link-Belt Belt Feeders. Free-rolling roller bearing idlers require less lubrication and adjustment. Adjustable skirting provides seal to prevent leakage. Recommended for all materials except those that are hot, fluffy or exceptionally large lump. Belt widths from 18 to 48 in.

LINK-BELT makes a complete feeder line . . . offers the right one for your requirements

In addition to the types above, Link-Belt builds bar flight, screw, oscillating, rotary table, rotary vane and reciprocating feeders. But Link-Belt offers more than a complete quality line to help you get the most efficient application. Link-Belt engineers base their recommendations upon a working knowledge gained in hundreds of plants over many years. Not only for feeding — for conveying, washing, classifying and screening as well — you can rely on Link-Belt all the way.

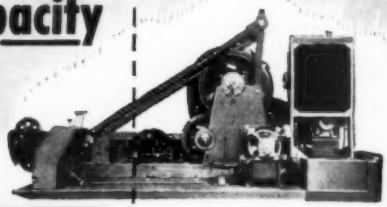
LINK-BELT

CONVEYING and PREPARATION MACHINERY

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices in principal cities.

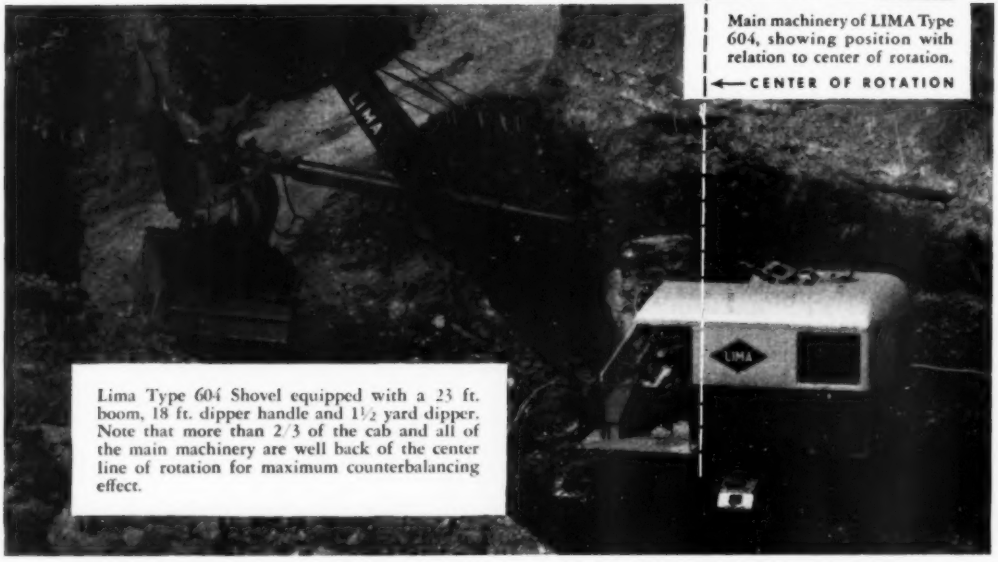
12.505

Why the LIMA Type 604 develops the greatest capacity per lb. of weight



Main machinery of LIMA Type 604, showing position with relation to center of rotation.

←CENTER OF ROTATION



Lima Type 604 Shovel equipped with a 23 ft. boom, 18 ft. dipper handle and 1½ yard dipper. Note that more than 2/3 of the cab and all of the main machinery are well back of the center line of rotation for maximum counterbalancing effect.

● The LIMA Type 604 shovel, crane and dragline is engineered to produce greatest capacity with minimum weight. This is achieved by placing as much weight as possible *behind* the center of rotation—eliminating the need for excessive counterweight. Hook rollers on which the machinery base revolves eliminate strain from the center pintle—permitting continuous, safe operation at full capacity.

The simple, compact design of the main machinery, using the fewest number of shafts to accomplish the various operations, further contributes to efficient, trouble-free service.

These are only a few of the features which make the LIMA 604 a favorite with owners and operators. The Lima Line includes shovels ¾ to 6 yards, Cranes 13 to 110 tons and Draglines variable.

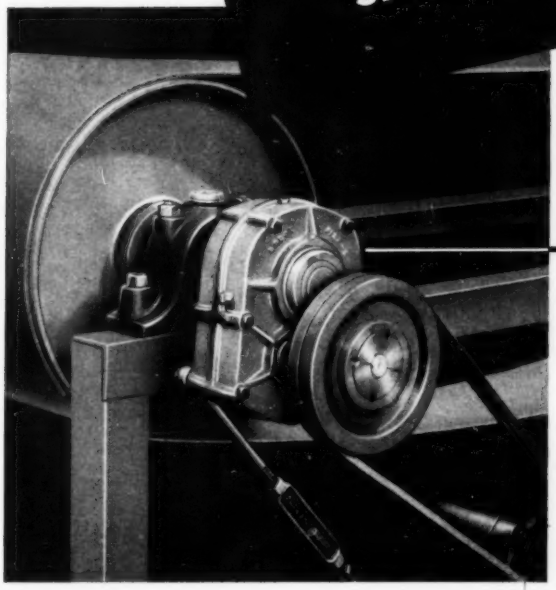
BALDWIN-LIMA-HAMILTON CORPORATION
LIMA-HAMILTON DIVISION
LIMA, OHIO, U. S. A.

BALDWIN BLH LIMA-HAMILTON

SALES AGENTS IN PRINCIPAL CITIES OF THE WORLD

BALDWIN-LIMA-HAMILTON

THE SPEED REDUCER THAT SAVES YOU MONEY!



Dodge

Torque-Arm

America's Most Complete Line of Shaft-Mounted Speed Reducers

- No special engineering required. No foundation to provide. No flexible couplings. No sliding base. No "lining-up" difficulties. No expensive installation. Stock TAPER-LOCK sheaves prescribed for each job to provide desired speeds. Application to other machines is practical and easy.
- Unit is driven through any V-Belt Drive. Torque-arm, fastened to any fixed object, anchors the reducer unit. Turnbuckle provides fast and accurate adjustment of belt tension.
- Backstop available from stock when required. Simple. Positive. Easily installed. Sealed inside the reducer housing.
- Compact, light weight, *rugged*. Quality built by Dodge for Dodge *dependable* service.
- Built in two series—Single and Double Reduction. Capacities from 1 to 27 h. p. Speeds from 12 to 330 rpm. Available from distributors' stocks.
- WRITE for special bulletin A602.

DODGE MANUFACTURING CORPORATION, 4000 Union Street, Mishawaka, Indiana

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new cost-saving methods. Look for his name under "Power Transmission Equipment" in classified phone book.

FIRST IN POWER TRANSMISSION MACHINERY!

V-BELTS AND TAPER-LOCK SHEAVES · DODGE-TIMKEN PILLOW BLOCKS

ROLLING GRIP AND DIAMOND D CLUTCHES

SOLID STEEL CONVEYOR PULLEYS

HIGH TONNAGE

UNIVERSAL 293QS TwinDual Gravel King for big jobs requiring volume production. Three stages of crushing, two screens.

LOW TONNAGE

UNIVERSAL Model GA Portable Jaw Crushing Unit. A complete self-contained plant for many small crushing jobs.

MEET ANY TONNAGE REQUIREMENT WITH UNIVERSAL STANDARD PLANTS

High tonnage, low tonnage—for any type of aggregate from riprap to aglime, or road ballast to washed sand—you can depend on Universal to meet your production requirements.

The wide range of cost-cutting, field-proved Universal standard plants permits selection of the right equipment without special built-to-order expense. Whether your jobs are big, medium, or small, Universal builds the plant you want for low cost production. Ask your Universal distributor or write for illustrated literature.

The most complete line of Portable, Semi-Portable, and Stationary Crushing, Screening, Loading and Washing Equipment.

- **Rock Plants**
- **Gravel Plants**
- **Aglime Plants**
- **Crushing Plants**
- **Coal Plants**
- **Screening Plants**
- **Washing Plants**
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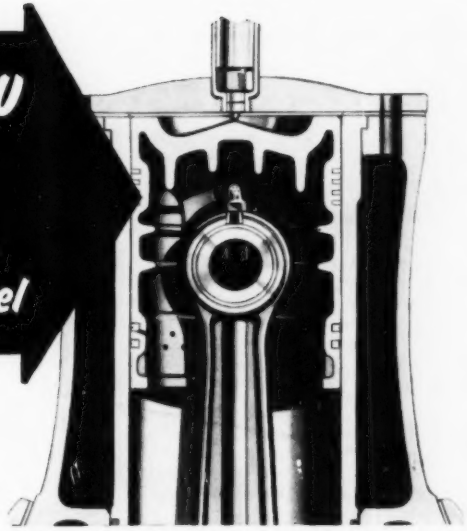
MURPHY GIVES YOU

MORE ECONOMY
SMOOTHER OPERATION
GREATER DEPENDABILITY
EASIER STARTING

because it's a "True" Diesel



ILLUSTRATED at the right in cross section is the combustion chamber of the Murphy Diesel. Note that it is plain and open with no artificial devices to effect combustion. In operation, completely atomized liquid fuel is sprayed directly into all parts of the air charge by means of the unit injector located in the center of the combustion chamber. Since the fuel burns immediately upon injection into the incandescent air charge, combustion is controlled solely by the unit injector, which in turn is precisely controlled by the hydraulic servo-type governor. This is "true" diesel operation.

To the Murphy owner it means more power from each drop of fuel and less wear and tear on the engine . . . lower costs in all ways.

More details on "true" diesel operation as well as other Murphy features are given in the booklet "10 Questions to Ask a Diesel Engine Salesman." Ask your Murphy Diesel Dealer for a copy or write direct.

MURPHY DIESEL COMPANY
5307 W. Burnham St., Milwaukee 14, Wisconsin
Sales, Parts, Service in All Areas

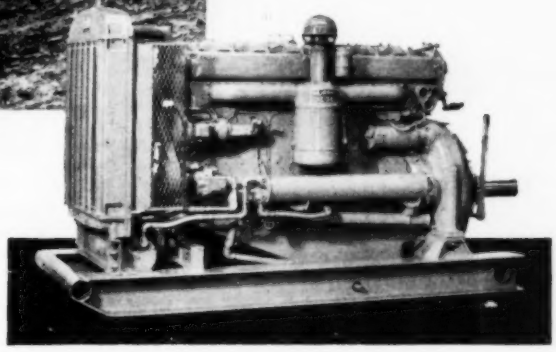
Illustrated is a 30" x 42" Pioneer jaw crusher owned by H. E. Sargent, Stillwater, Maine, and powered by a 6 cylinder Murphy Diesel. The rugged construction, fast response and operating economy of Murphy Diesels make them ideal for this type of service.

MURPHY DIESEL

Heavy duty power

for rock crushing

Murphy Diesel Engines and Power Units for portable or stationary crushing plants, 90 to 226 H. P. 1200 and 1400 RPM. Generator Sets, 60 to 140 K.W. 209



HERE'S WHAT USERS SAY ABOUT THE DEMPSTER-DIGGSTER—

"IT'S THE FASTEST, MOST EFFICIENT EXCAVATING TOOL I HAVE USED"

—A. J. METLER, *Contractor*

"During the past several years," Mr. Metler says, "I have owned and operated four conventional full revolving crawler and truck mounted shovels and cranes and know that they have a direct application to many types of excavating work.

"On the other hand, I have learned that the fast operation of the tricycle mounted Dempster-Diggster permits it to be used on certain types of work to a considerable advantage. Its mobility permits quicker transfer from one job to another.

"I have had excellent results from the Dempster-Diggster and consider it the fastest and most efficient excavating tool I have used."

Mr. Metler is one of the many contractors who has found the Dempster-Diggster to be "the fastest and most efficient excavating tool" available.

This speed and efficiency in excavation work is accounted for, mainly, by the Diggster's exclusive independent hydraulic crowd and hoist action, its hydraulic steering and wheel-type traction.

The power crowd permits bucket to keep digging until loaded . . . no digging with wheels. The hydraulic steering gives the driver sensitive, easy, finger-tip control. When accelerated, a one-handed twist of the steering wheel puts the machine in any desired position. By operating on rubber-tired wheels, the Diggster, of course, can move at the fastest possible speed on the job and to and from jobs.

The Type HL Dempster-Diggster is equipped for extraordinary high dumping. The bottom of bucket is 13 feet six inches above ground.

HERE IS THE NEW TYPE HL DEMPSTER-DIGGSTER shown excavating with a 1¼ cu. yd. (heaped) digging bucket. The Type HL Dempster-Diggster will dig through an 18 foot bank while the Type GRD digs through a 15 foot bank.

The Dempster-Diggster is a "must" for contractors, large or small operators alike.

The Dempster-Diggster has a 15 foot turning radius, is 20 feet long when bucket is in traveling position, and is nine feet and six inches in height.

Four standard interchangeable buckets of two types are available. Digging buckets with four bottom teeth in 1 and 1¼ cubic yard (heaped) capacities, and materials handling buckets in 1½ and 2 cubic yard (struck) capacities.

For fast, efficient operation in difficult terrain, the Diggster is available with crawler-type traction.

"I have not personally used the Dempster-Diggster mounted on crawler treads," Mr. Metler said, "but have seen it in operation on jobs adjacent to mine. I know it is a very effective tool and has many applications."

Construction men have found that on big jobs the Dempster-Diggster has no equal for working in tight places and for freeing big shovels for heavier work. The Diggster has an 8 foot 10 inch crowing reach, will dig through a 15 foot bank, and will dig 15 inches below grade.

Pound for pound, the Dempster-Diggster will out dig and out load any other available competing machine in tough going! Let us prove that statement!

Write today for complete information and prices. The Dempster-Diggster is a product of Dempster Brothers, Inc.

This is the type GRD Dempster-Diggster, which Contractor A. J. Metler considers "the fastest and most efficient excavating tool I have used." It is shown digging 15 inches below grade.

DEMPSTER DIGGSTER

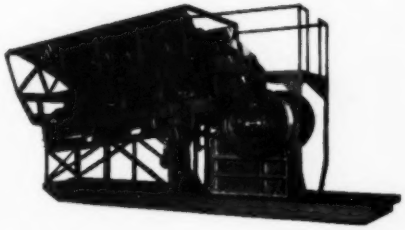
DEMPSTER BROTHERS

2111 N. Knox

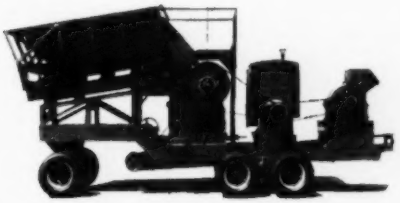
Knoxville 17, Tennessee

YOU CAN RELY on ROGERS for CRUSHING EQUIPMENT!

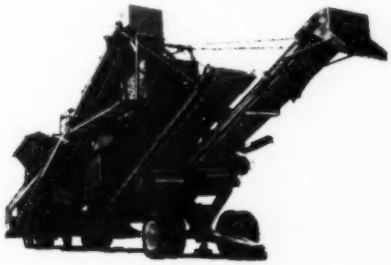
During half a century of building rock-crushing equipment, the name Rogers has become known for RELIABILITY. Whether you have need of a single unit or a complete plant, the selection of ROGERS equipment is assurance of steady operation and low production cost.



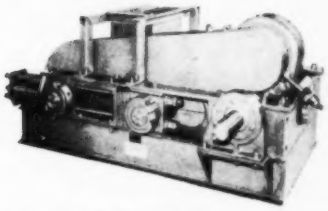
Rogers jaw crusher and apron feeder with operators platform, all mounted on steel skids. A convenient, easily moved, heavy duty unit for efficient primary crushing.



Portable crushing plant consisting of jaw crusher, apron feeder, hammer mill and diesel engine for production of large tonnages of chips or agstone.



This specially designed Rogers "Three Product" portable crusher turns out base rock, chips and agricultural limestone, all at the same time. An example of Rogers engineering.



Crushing Rolls have long been a Rogers specialty. Their reliability is proved by many years of use. Rogers Crushing Rolls are built in several styles. The four tension rod rolls illustrated are driven through a gear reducer and chain drive.

For additional information and descriptive literature write:

ROGERS IRON WORKS COMPANY
Joplin, Missouri

Want Help WITH SCREENING?

RIPL-FLO SCREEN
A high capacity inclined vibrating screen with two-bearing mechanism. Low weight, maintenance, power requirement.

LOW-HEAD SCREEN
A horizontal screen for wet or dry screening, rinsing or dewatering. Straightline motion. Saves headroom, space.

STYLE "C" SCREEN
Extra heavy duty screen particularly adapted for scalping. Handles pieces up to 3 by 4 ft, weighing 3,000 pounds.

AERO-VIBE SCREEN
A sturdy, low cost vibrating screen for lump or granular materials. Makes separations 1½ in. square to 28 mesh.

UTAH ELECTRIC SCREEN
Handles fine, granular materials from 10 to 48 mesh (dry) or 65 mesh (wet). Non-blinding device minimizes blinding.

ALLIS-CHALMERS district offices offer you the services of experienced vibrating screen engineers. These men are specialists who have the training and experience to help you get top screening performance and lowest screening costs for your job.

These experts will come into your plant, look over your present equipment, and suggest how your screening can be made a more profitable operation. Their recommendations are unbiased because Allis-Chalmers builds *all* types of vibrating screens . . . for *any* screening application. All Allis-Chalmers screens can be obtained complete with motor, drive and control.

Feel free to call on Allis-Chalmers for real help in solving screening problems. You'll be getting the finest engineering and experience available anywhere. Allis-Chalmers, Milwaukee 1, Wisconsin. A-3541

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in WIRE ROPE, too the RIGHT KIND of muscle makes the difference

Endowed with highly specialized leg muscles, the kangaroo is able to make tremendous flying leaps—even with Junior perched in the rumble seat.

In wire rope, too, specialized jobs call for specialized muscles. That's why in Wickwire Rope we make sure you always get the proper combination of physical properties to best resist the destructive forces found on your particular job—whether it be abrasion, load strain, shock stress or bending fatigue.

Wickwire Rope gives you the benefit of long experience and specialized know-how which assures you of exactly the right kind of rope your particular job demands.

For additional information write or phone our nearest sales office.

THE COLORADO FUEL & IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
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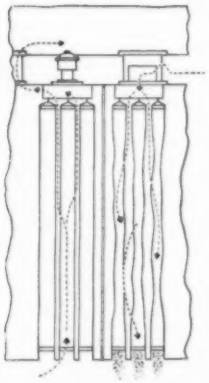
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

LOOK FOR THE YELLOW TRIANGLE ON THE REEL

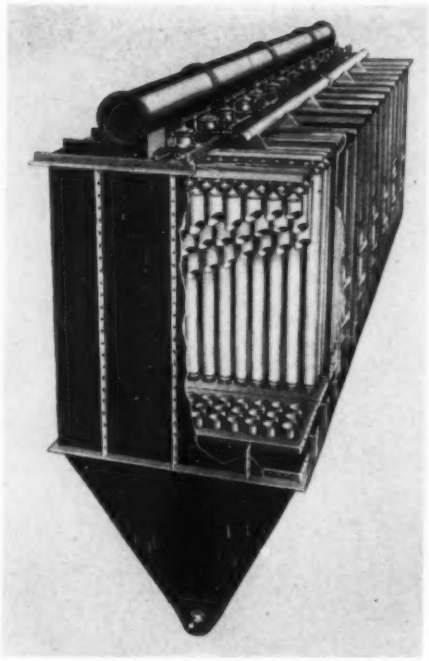
WICKWIRE ROPE

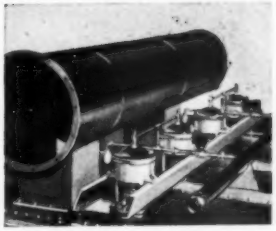
CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL & IRON CORPORATION



Shown above dust laden air moving upward, distending bags. Right half of cut shows reversed air current as bags are shaken and cleaned. At right the exterior of entire unit.





Close-up of automatic shaker units and an air reversal valve. Norblo bag shaking involves only one compartment at a time for only 10 seconds. Timing cycle is variable for dust loading, without shutting down.

Dust Control For Full Production

In a number of presently very important industrial jobs Norblo automatic bag type dust and fume collectors are making new records for high efficiency. The basic principles of bag cleaning, one compartment at a time, with combined shaking and air reversal, are shown above. Norblo automatic cleaning is variable for dust load; timing can be changed without shutting down the unit, and any compartment can be cut out for inspection or bag repair.

All of these features permit continuous heavy duty operation with maximum capacity of the cloth area.

Most of the modern smelter bag houses in North America, and most of the important cement and rock products plant installations in this country, are using Norblo dust collecting equipment.

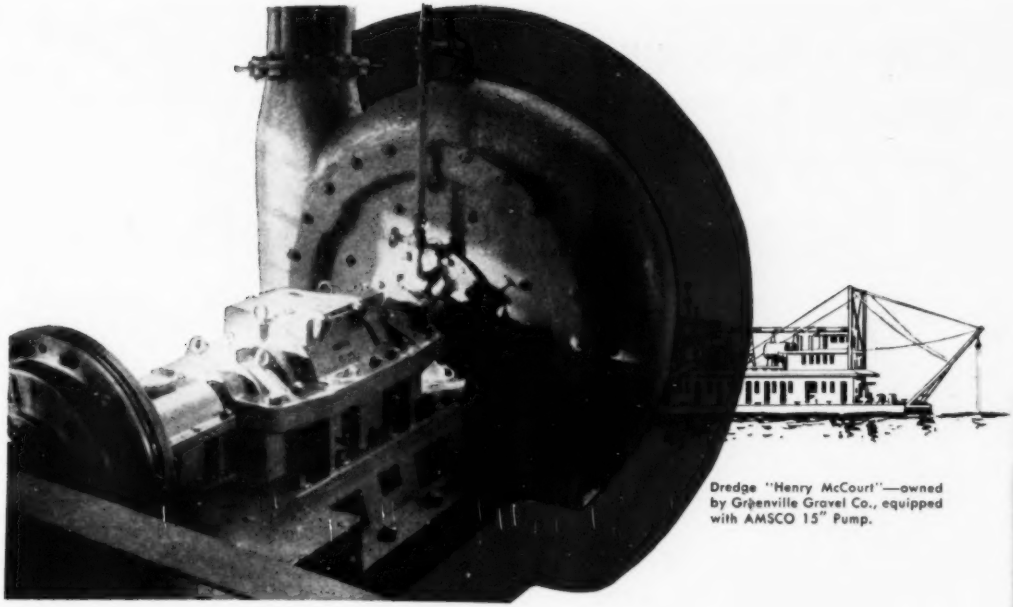
Norblo also builds centrifugal and hydraulic dust collectors, exhaust fans and cement air cooling systems. Write for literature on any of these

Norblo

Engineered Dust Collection Systems for All Industries

THE NORTHERN BLOWER COMPANY

6407 BARBERTON AVE. • CLEVELAND 2, OHIO



Dredge "Henry McCourt"—owned by Greenville Gravel Co., equipped with AMSCO 15" Pump.

FOUND: $11,000 a year in lost production

A typical example of how AMSCO Pumps give you a higher return on your investment

When a man has been in the sand and gravel business for 37 years, you can bet he's an experienced judge of pump performance. That's Mr. W. E. McCourt, President of Greenville Gravel Co. in Greenville, Mississippi, who can—*from the record*—give you cold facts and figures on why his AMSCO Pumps are far and away the best pumps he has ever used.

He can tell you, for example, that pumps he used up until 3 years ago had to be shut down for repairs and replacements every 8 weeks—each shutdown an all-day job for a 4-man crew, and about $1800 worth of production lost. Compare that with the performance of the first AMSCO Pump installed in March, 1948, on the dredge "Milly Fry": a shutdown only about once a year . . . *one shutdown instead of seven!* When you're operating 7 days a week, a little arithmetic proves that in a year's time the AMSCO Pump saved roughly $11,000 through higher production alone!

All this—plus the 15% higher tonnage per hour that the AMSCO Pump produced—is the reason why you'll see the name "AMSCO" on the new pump just installed on the dredge "Henry McCourt", also owned by the company.

This is the kind of dependable performance you can expect from AMSCO Pumps. From the suction end to the driving coupling, they're built to give you lower handling costs per ton—*for a higher return on your investment.*

Wherever you pump materials that cause impact and/or abrasion . . .

. . . find out about longer-lasting, dollar-saving AMSCO Pumps. There's a size and type for every type of materials handling service . . . made by the world's largest producers of Manganese Steel castings for all industry.

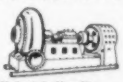
AMSCO controls impact and abrasive wear in 5 basic industrial operations:

Power Transmission

Mining & Excavating

Transportation

Crushing & Pulverizing



Materials Handling

Brake Shoe **AMERICAN MANGANESE STEEL DIVISION**

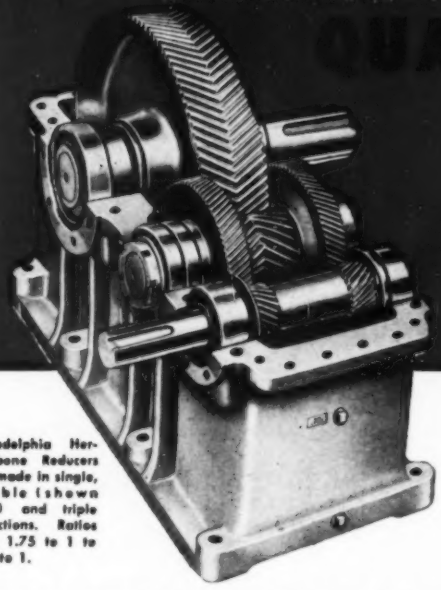
396 EAST 14th STREET · CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

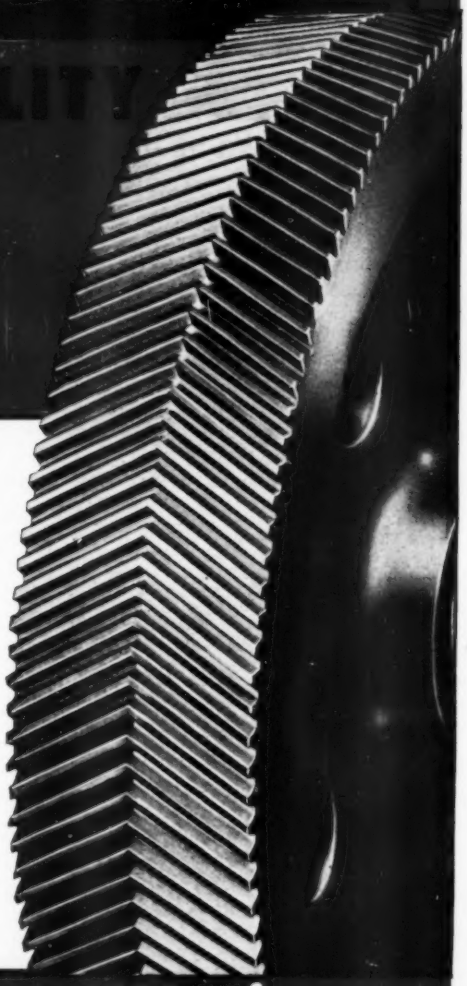
THERE'S NO DOUBT . . . THEY SAVE

"Custom Built"

QUALITY



Philadelphia Herringbone Reducers are made in single, double (shown here) and triple reductions. Ratios from 1.75 to 1 to 292 to 1.



As a unit of a "standard line", the Philadelphia Herringbone Gear Speed Reducer cannot be excelled. Its superiority of design and workmanship reaches the heights of custom built quality . . . yet every part is "standard".

Of the hundreds of Units passing through the shop, the majority may look alike, yet each Unit is handled as a *special assignment*. Built right into it, are the specific service characteristics that will deliver the required power with maximum efficiency, economy, durability and minimum maintenance.

Resolved to practical terms, Philadelphia Herringbone Speed Reducers, while made to standard specifications, are produced by master craftsmen to do *your* job exactly as *you* want it done.

Write on your Business Letterhead for Catalog H49.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.
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Industrial Gears and Speed Reducers
LimiTorque Valve Controls

OWNER SAYS- "THOMAS PUMP LASTS 400% LONGER"

CENTRAL SAND COMPANY
PHONE 74
TAVARES, FLORIDA
September 15, 1951

Thomas Foundries, Inc.
Birmingham, Alabama

Gentlemen:

This replies to your inquiry about the operation of our Thomas Pump -- 10" Suction, 8" Discharge.

It is by far the most satisfactory pump we have ever used. It has, after several months pumping sand, shown us service life of parts, at least four times that of the cast iron pumps previously used and none of its parts are badly worn as yet. There has been no maintenance cost whatever and no down time for repairs or adjustments.

The Thomas Pump is producing considerably more sand than the combined production of the two (2) 8" pumps it replaced and has already more than paid for itself in our operation.

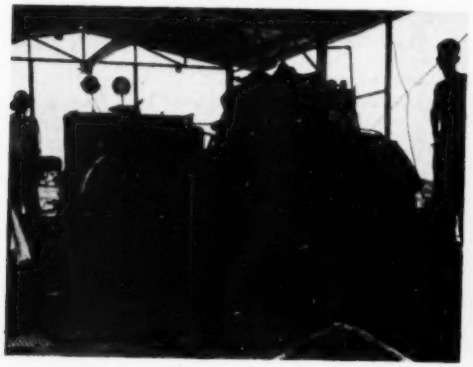
Yours truly,
CENTRAL SAND COMPANY
Charles P. Lovell

NO MAINTENANCE— NO DOWN TIME—STILL IN GOOD CONDITION AFTER SEVERAL MONTHS SERVICE

Read Mr. Lovell's letter. He is another enthusiastic user of Thomas Dredge Pumps. His experience proves again that Thomas pumps (especially designed to be made of metal highly resistant to abrasion) save money through increased production, longer wear and lower maintenance cost.

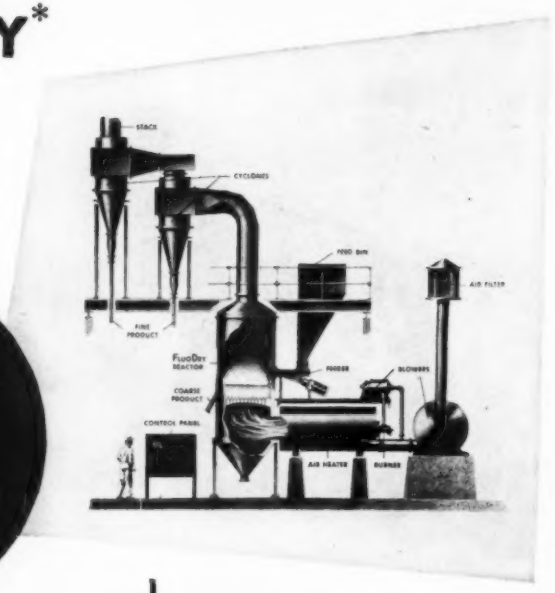
You can profit by Mr. Lovell's experience, too. Write for our illustrated folder on Thomas Dredge Pumps. It describes how this pump is different — different in design and construction — and why it outperforms old style conventional dredge pumps. Address THOMAS FOUNDRIES, Inc., BIRMINGHAM, ALABAMA.

Thomas Dredge Pump operated by Central Sand Company, Tavares, Florida.



General view of Thomas Dredge Pump installation for Central Sand Company.

the Dorrco FLUO DRY* system...



A new method of drying surface moisture, of accurately dry-sizing in the 28 to 100 mesh range, and of low temperature heat conditioning through the use of fluidization.

LIMESTONE AND DOLOMITE FINES—FluoDry can dry limestone or dolomite fines as produced, or as reclaimed from stockpile, and recover them as such salable products as limestone sands, agstone or higher-priced fillers.

INDUSTRIAL MINERALS—FluoDry can dry industrial minerals such as phosphate rock, potash and ilmenite sands with greater efficiency and economy than conventional methods.

SAND PRODUCTS—FluoDry can dry, or selectively size, sand products in those ranges where the material is too fine to screen and too coarse for air separation.

OTHER APPLICATIONS—FluoDry has numerous conditioning applications such as surface activation of ilmenite and cobalt concentrates ahead of flotation, dehydration of clay and shale products, and other low temperature treatment problems.

If these facts... sound interesting and you have an active problem of drying or sizing, we will be glad to discuss it in detail.

What are the advantages of FluoDry as compared with conventional drying and sizing methods?

1. More accurate temperature control
2. Lower fuel requirements
3. Lower maintenance costs
4. Lower investment cost
5. Lower operating cost
6. No moving parts

* Trademark, Reg. U. S. Pat. Off.

DORRCO

DORR

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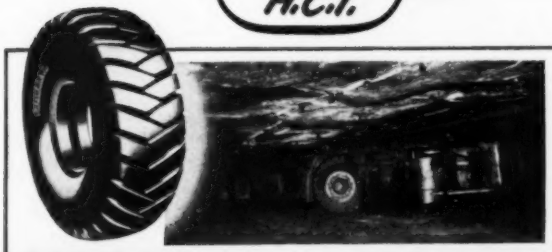
Up steep hills—on loose gravel and sand piles over sharp rocks—slush, mud, gravel—out and over the highway **GENERALS** deliver more loads

Faster! Easier! At Lower Cost!

GENERAL L. C. M—for most work off-the-road. Massive tread and thick, tough shoulders develop extra traction. Extra wear on tough, jagged surfaces. Stronger rayon cord body with more natural rubber built into its shock-absorber design.

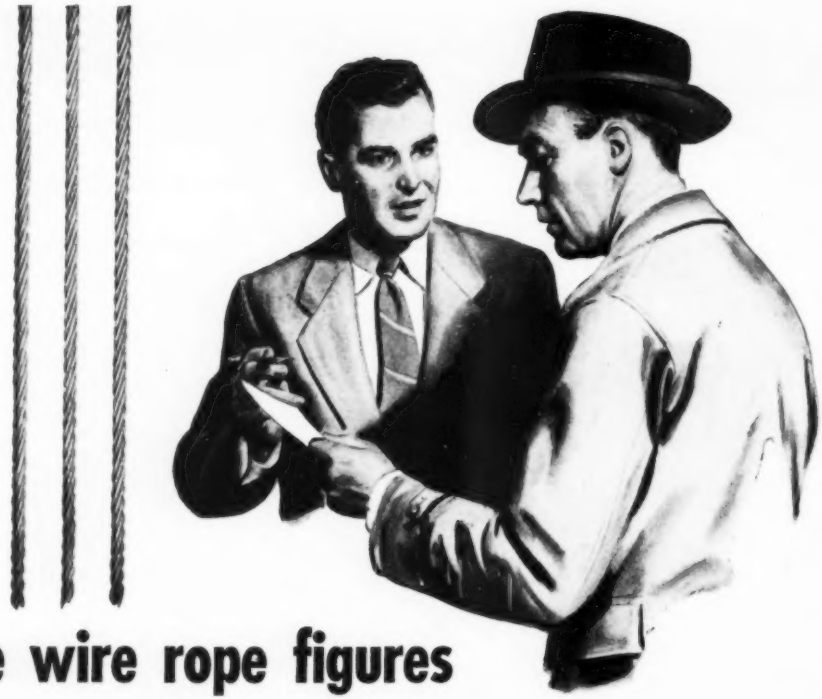
GENERAL H. C. T.—for more work on-the-road. Thick, saw-tooth tread supported by broad, angled shoulder cleats develop extra traction. Smoother rolling, quicker stopping. More original and more recap miles.



GENERAL UNDERGROUND MINING TIRE

This specially designed, ruggedly built, thick-shouldered mining tire will assure more uninterrupted hours of work. More maneuverability.

REQUEST GENERAL TIRES ON YOUR NEW EQUIPMENT



"These wire rope figures really opened our eyes!"

"Couple of years ago, the boss asked me to start checking our wire rope costs. He wanted a little system of records that would tell us what each rope was doing, and how much work we were actually getting from it. Figured we could learn the brand that would last the longest—and cost the least—on our type of work.

"So I started keeping track. In our case, the jobs involving rope boiled down to a matter of tonnages moved. Wasn't at all hard to record what each rope accounted for in its lifetime. When I'd been checking long enough for the figures to have some meaning, I showed 'em to the boss. By then I could tell which make of rope was doing the best job for us, costwise and every way. The figures really opened our eyes!"

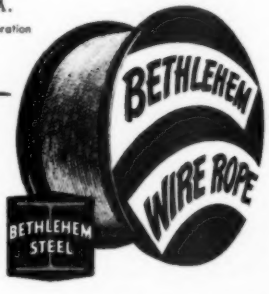
These men weren't the first to learn the value of checking rope performance. Many users of Bethlehem wire rope follow the practice regularly. We're always glad to see it, for it enables actual comparisons between brands . . . and we know that in any such comparisons, Bethlehem rope will stand out from the crowd.

Here's a fair suggestion: over a period of time, stack the Bethlehem product against any other brands of your choice. Keep tabs on them all, and at intervals study your figures. Our guess is, those records of yours will prove beyond question the solid economy—the long-term economy—of Bethlehem wire rope.

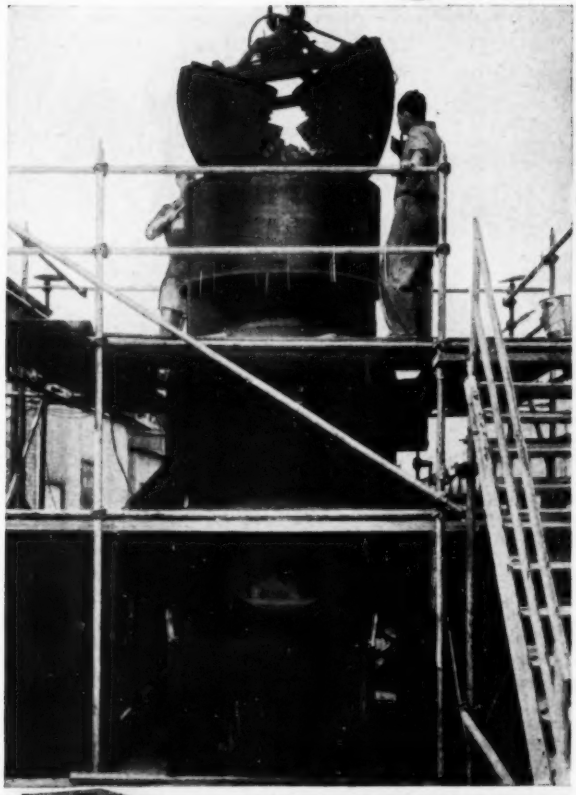
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

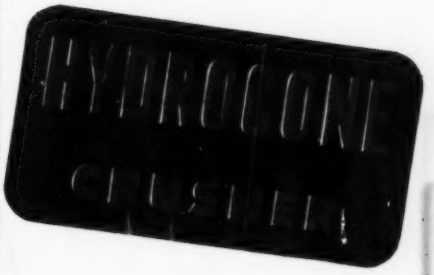
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

LET YOUR RECORDS TELL YOU!



WILL YOUR CRUSHER MEET THIS Strength Test?





Oscillograph readings of strain on *Hydrocone* crusher were made at various points on the topshell spider, topshell, bottomshell and bottom plate. Test was made in A-C Processing Machinery laboratory by Allis-Chalmers engineers.

IN A SPECIAL TEST, the actual stress on various parts of a *Hydrocone* crusher was measured with an oscillograph. This stress analysis showed that strain on the crusher did not exceed 4000 psi at any point — even though hard taconite ore was being crushed.

The test indicated, too, how well various elements of the *Hydrocone* crusher are proportioned for high strength — vital to long life and low maintenance!

NO DEAD WEIGHT

All weight in the *Hydrocone* crusher is concentrated into resisting the crushing force. Top and bottom shell, eccentric and spider cap are of cast steel construction. The short, heavy mainshaft is annealed forged steel. Mantle and concaves are of a special steel.

Hydraulic *Speed-Set* control enables the operator to change product size quickly and easily. Automatic Reset provides hydraulic protection from tramp iron.

More facts about the *Hydrocone* crusher can be obtained from the A-C representative in your area, or by writing for *Hydrocone* crusher Bulletin 07B7145B. Allis-Chalmers, Milwaukee 1, Wis.

A-3487

Hydrocone and *Speed-Set* are Allis-Chalmers trademarks.

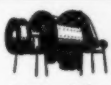
ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Pulverators

Vibrating Screens

Jaw Crushers



Grinding Mills

Gyratory Crushers

Kilns, Coolers, Dryers

Doing ONE THING WELL

Economical delivery of large tonnages over short or long distances—from one operation to another if need be (see photo above)—that's the function of the Jeffrey Belt Conveyor. You can depend on Jeffrey Belt Idlers to carry the load. They are built to take severe punishment year after year—roller or ball-bearing troughing or return types. A Jeffrey-engineered material handling system means the best in mechanical efficiency—the best method of doing your particular job, providing economy and long life in the equipment recommended. May we be of service to you?

A LOOK AT THESE MAY HELP: Bin Valves • Bucket Elevators • Chains • Conveyors • Coolers • Car Pullers Crushers • Dryers • Feeders • Idlers (Belt) • Pulverizers • Screens • Packers • Sprockets • Weigh-Feeders Transmission Machinery • • • • *LITERATURE ON REQUEST*

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917 North Fourth St., Columbus 16, Ohio
ESTABLISHED 1877

Complete Line of Material Handling, Processing and Mining Equipment

When you Compare Buckets...

measure by HENDRIX

Dependability!

3/8 to 40
CUBIC YARDS

A TYPE & SIZE
FOR EVERY
DIGGING PURPOSE

When you compare buckets, measure by Hendrix DEPENDABILITY! Hendrix Dragline Buckets are engineered and built for long-life service in all types of digging. Their PERFORMANCE has earned for them a reputation for durability and low-cost operation *on the job . . . in the field!*

Repeat orders prove customer satisfaction . . . Hendrix DEPENDABILITY will pay off on your present or future jobs!

Hendrix Buckets may be special ordered without perforations

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

HENDRIX MANUFACTURING CO., INC.

MANSFIELD – LOUISIANA

BAY CITY - the biggest value in ¾ yard machines .... easily convertible

Quick convertibility without machinery change is a feature that gives you more for your equipment dollar when you buy BAY CITY. Then too, you get ruggedness, dependability and long life that can't be matched.

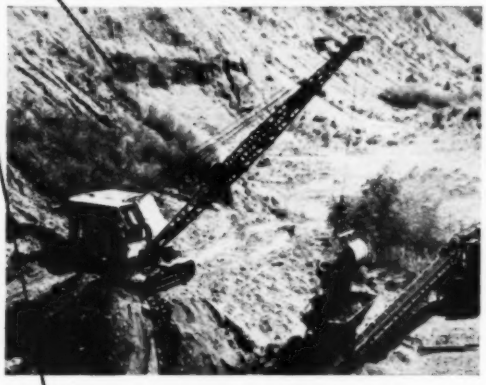
Well balanced for Crane Work.

Stability for low boom operations.

Easy operation for hard digging.

High line speeds for faster material handling.

Power for fast digging cycle.

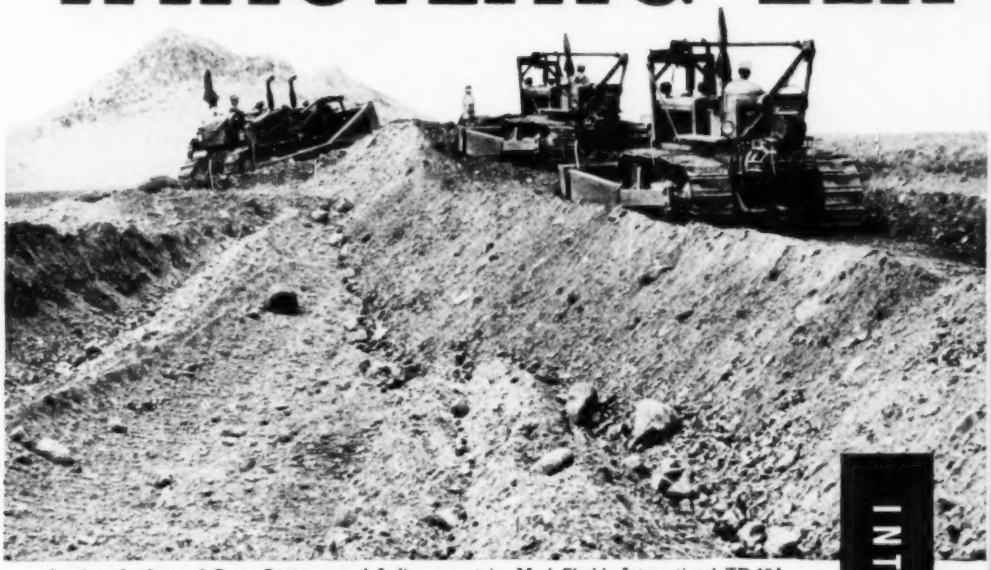


BAY CITY

BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

New Trail for WHISTLING ELK



In the shadow of Bear Butte, sacred Indian mountain, Myrl Clark's International TD-18A crawlers each doze up to 2,000 tons of gravel from pits in 14-hour double shifts.

Myrl Clark, South Dakota's largest gravel contractor, steps up output with International power, at site where Indian medicine man predicts end of war

Bear Butte, South Dakota, is the sacred mountain of the Cheyenne Indians, where Chief Whistling Elk interprets the dreams of his tribesmen and forecasts the end of the Korean War. (He correctly predicted V-J Day five years ago.)

Whistling Elk gets to Bear Butte on South Dakota State Highway No. 24—and he'll get there easier and faster with Myrl Clark's resurfacing of the highway with gravel dozed from pits just below Bear Butte.

Clark confines his predictions to forecast finishing his job in half the contract time. Helping him deliver are three International TD-18A crawlers, each dozing up to 2,000 tons of gravel in 14-hour double shifts in the pits.

Clark and his men believe in the International TD-18A. Just listen:

"Easier to work heavy loads," says Clark.

"Lots of power—especially that second gear," says operator P. Hensley.

"Don't lose time in the morning because they start fast," superintendent Charles Nohava puts in.

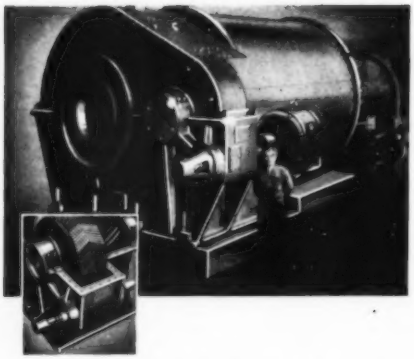
"Gets back fast after a big push to the gravel crusher trap for another load," says operator Rolland Haskell.

Isn't that the kind of performance you want on your jobs? Then see your International Industrial Distributor for the whole story on International *"Power that Pays!"*

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

INTERNATIONAL

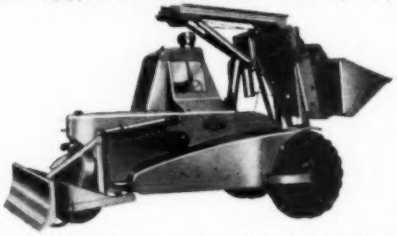
POWER THAT PAYS



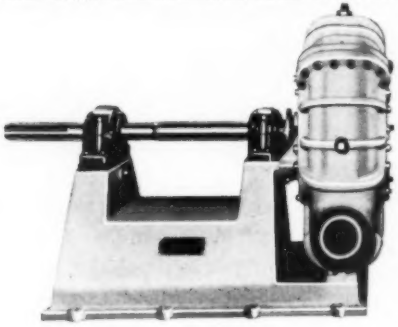
SKF-equipped Kennedy-Van Saun Manufacturing and Engineering Corp. Integral Gear Driven Mill.

SKF-equipped Iowa Manufacturing Co. Double Impeller Impact Breaker.

SKF-equipped Mixermobile Manufacturers "Duo-Way" Scoop.



SKF-equipped Thomas Foundries, Inc., "Durable" Dredge Pump.



why do so many prefer SKF?

It's pretty hard *not* to buy good bearings today, but SKF is the preferred bearing with many manufacturers of pit and quarry equipment.

There are good reasons why!

These manufacturers know SKF as a reliable, friendly supplier. They've learned to have implicit confidence in the experienced bearing engineering specialists at SKF's headquarters. They appreciate the teamwork of SKF field men who are qualified specialists in the application of bearings to pit and quarry equipment.

Their customers know the value of the complete maintenance service available to them through SKF's Distributor Organization.

Whatever your product, your engineers and designers can have this helpful SKF teamwork simply by asking for it. 7289

SKF®
BALL AND ROLLER BEARINGS

8 REASONS WHY SKF IS PREFERRED BY ALL INDUSTRY

integrity • craftsmanship • metallurgy
tolerance control • surface finish • product uniformity
engineering service • field service

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.—*manufacturers of* **SKF** *and* HESS-BRIGHT *bearings.*

Amateur Standing...

in need of an expert!

When considering a bag for your product, remember that this important selection also requires the attention of an expert. Call in your technically trained Chase Salesman. You can then be *sure* that the bag is designed to fill your specific needs. You can be *sure* that it is attractive, that it protects your product, that it will help sell your product. Remember, next time —every time—consult your Chase Salesman.

BAGS FOR ALL INDUSTRY AND AGRICULTURE

- cotton bags of all kinds
- paper and Multiwall bags
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- Topmill burlap bags
- combination bags, liners and specialties

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MORE than a family resemblance

Regardless of what size Oliver Industrial Wheel Tractor and Ware Loader you buy . . . "66", "77", "88" . . . you get the identical superior design and performance features in each.

The smaller tractor-loaders are not built down to a price level . . . they are built up to the same quality standards as the larger models.

In the tractors, you get the famous Oliver *plus* power and easy maneuverability that get you in and out of the rough spots . . . *fast!*

In the loaders, you get the same top features in each . . . hydraulically controlled bucket for greater "breaking out" action—full bucket loads . . . hydraulically controlled discharge—easily and gently, fast or slow . . . mid-section pivot of the loader arms for longer reach of dumping position and correct weight distribution on tractor frames . . . simple, rugged design that eliminates unneeded dead weight . . . shock loads absorbed by hydraulic rams for longer tractor and loader life—lower maintenance.

Your Oliver Industrial Distributor will be happy to show you what the "more than a family resemblance" in Oliver-Ware Tractor Loaders means to you in lower cost operation. And see the Oliver color film "Task Force on Wheels."

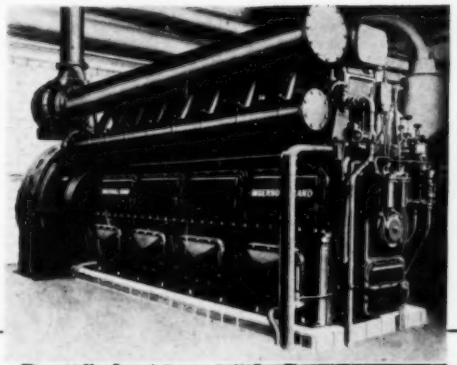
THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors

Heavy-Duty Diesels...

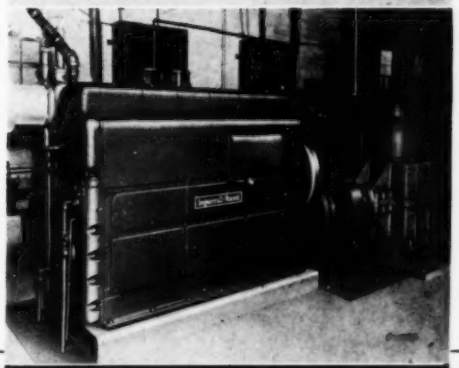
all designed for continuous full-load operation



An I-R 8 cylinder SS Diesel Engine driving a 600 kw generator in a factory.

The I-R type "S" is a 4-cycle, heavy-duty, medium-speed diesel engine with a fuel consumption of only 0.38 lbs per bhp-hr at full load. It has a bore of 10½ inches and a stroke of 12 inches. Speed is 720 rpm for driving 60-cycle generators and 750 rpm for 50-cycle and mechanical drive. It is available with 6, 7, or 8 in-line cylinders and rated at 450, 525 and 600 hp.

The type "SS" is a turbo-charged "S" and provides maximum economy of space and weight by producing more than 50 percent more power than unsupercharged engines. Available in 6, 7, and 8 sizes for 710, 825, and 945 hp.

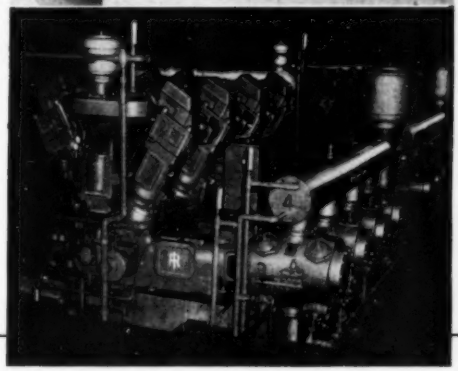


An Ingersoll-Rand 6 cylinder TS Diesel Engine driving an I-R vertical water pump through right-angle gears at a paper mill.

Ingersoll-Rand's new TS diesel engine is a smaller, lighter-weight engine built with all the longlife features, stamina and dependability of big engine design. It is 7 inch bore, 8½ inch stroke diesel with a fuel consumption of only 0.40 lbs per bhp-hr, but weighs about 30 lbs per hp.

Features include: big 5¼" crankshaft, full-floating aluminum-alloy bearings—full pressure lubrication, individual cylinder heads, replaceable liners, removable valve-seat inserts, large single-hole injection nozzles, gear-driven supercharger and many others.

Available with 6 or 8 in-line cylinders and delivering 200 to 375 continuous hp at 900-1000 rpm.



An I-R XVO Diesel-engine-driven air compressor with 8 power cylinders and 4 compressor cylinders on a construction project.

When a Diesel-powered compressor is needed, the Ingersoll-Rand "XVO" is the perfect answer; it combines a heavy-duty 4-cycle diesel engine and a heavy-duty, double-acting compressor in a single, compact machine that's easy to install and relocate. It assures a maximum compressed air output per pound of fuel. With one gallon of fuel oil, the XVO compresses 5600 cu ft of air to 100 lb pressure.

The XVO is available with compressor cylinders for any pressure or vacuum in four sizes with 2, 4, 6, or 8 diesel power cylinders rated at 66 to 280 hp.

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y. 638-7

Starting Air Compressors • Hoists
Impactools • Starting Air Motors

COMPRESSORS • AIR TOOLS • ROCK DRILLS • TURBO-BLOWERS • CONDENSERS • CENTRIFUGAL PUMPS • DIESEL & GAS ENGINES

"A SMOOTH PERFORMER"

Says Lake City, Tenn. Lightweight Aggregate Corp. of This Single Deck Seco Screen

Photographed on the Job, Lake City, Tenn.

Purrs Like a Kitten

In the modern, well engineered plant of Lake City Lightweight Aggregate Corp., this single deck 4 x 10′ Seco vibrating screen is used to screen crushed shale through a $\frac{5}{8}$″ screen cloth opening. Not only does it do this job with complete satisfaction but it operates so smoothly . . . that there is virtually no vibration transmitted to the supporting structure. There's no bobbing . . . no weaving of the screen . . . thanks to Seco's exclusive fully controlled true circular action.

This screen has had no lost time for mechanical failures.

This important feature of every Seco Vibrating Screen is the big reason why they stand up year after year . . . delivering maximum production . . . with a minimum of attention. Get the whole Seco story. Send for Catalog #203 today!

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

What's Ahead?

Check your screen requirements now.

Play Safe! Replace or Enlarge with Performance Proven Seco Vibrating Screens.

made only by

Screen Equipment Co. Inc.

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IN CANADA:
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PAYLOADERS
Pay Off ANY Place

Sand, gravel, aglime, crushed stone, gypsum . . . or any other bulk material can be loaded, carried or stock-piled fast and economically with PAY-LOADERS. These special tractor shovels are complete Hough-built tractors *and* shovels having exclusive profit-making features and advantages that enable them to do more work, more kinds of work, and do it safer and better.

PAYLOADERS give you full-reversing transmissions with several speeds both forward *and* reverse . . . operator location high and forward for fullest visibility . . . engine location over drive wheels for maximum stability and traction . . . automatic, quick tip-back of bucket for real digging power and spillage prevention.

PAYLOADER unit-design also offers you unit responsibility, and there is a complete range of sizes from 12 cu. ft. up to 1½ cu. yds. from which to choose. Your Hough Distributor will gladly give you full PAYLOADER facts or write THE FRANK G. HOUGH CO., 750 Sunnyside Avenue, Libertyville, Illinois.

WRITE for full information about any PAYLOADER — the 1½ yd. 4-wheel drive Model HM; the 1¼ yd. HL; the ¾ yd. HF; the ½ yd. HE; the 12 cu. ft. HA.

SAY "HUFF"

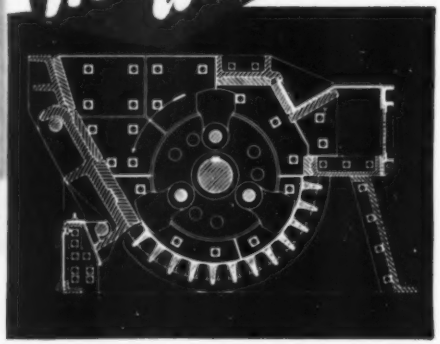
PAYLOADER®

THE FRANK G. HOUGH CO. . . . SINCE 1920

25% to 75% SMALLER INVESTMENT

with a Williams "Super-Slugger" Crusher

Here's why



Feed opening 41"x 30" to 51"x 81". Hammer blows 10,800 blows per minute in the smallest size, each blow 1,285,200 foot pounds to 17,280 blows per minute in the largest size, each blow 2,893,760 foot pounds. Size of product quickly changed by using grates with smaller openings.

because it reduces power shovel loaded rock to 1½ inch or ¾ inch in one operation

In one operation! That means not only a saving in machinery, less depreciation by wear and tear, but the additional savings of foundations, conveyors, drives and buildings. Because the Super-Slugger is a heavy duty hammermill that can crush power shovel loaded rock down to feed size for fine grinding or to commercial crushed stone. Built to do a giant sized job because it's heavily reinforced at all parts subject to shock and wear . . . with extra heavy manganese steel liners. Shafts of unusually large diameter. The Super-Slugger is a real payload and profit builder! For detailed information write for bulletin 634.

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WC-49-4

WILLIAMS ALSO MAKES—

Heavy-duty hammermills in smaller sizes for all quarry operations; impact and roller mills for 200 to 325 mesh grinding; drier mills; air separators; vibrating screens; steel bins; complete "package" crushing and grinding plants.

WILLIAMS

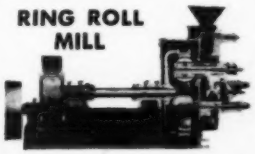
CRUSHERS GRINDERS SHREDDERS

STURTEVANT AIR SEPARATORS

Produce Aggregates that meet Government Specifications

Sturtevant Air Separator in "closed circuit" with pulverizer. This combination increases tonnage and reduces costs in all types of industry.

RING ROLL MILL



Range 10 to 200 mesh. Use this mill in closed circuit with Sturtevant Air Separators.

On dam projects throughout the country, Sturtevant Air Separators are helping contractors meet U. S. Corps of Engineers specifications for proper analysis of aggregates. Here's how — Sturtevant Air Separators de-dust and remove the fine fraction according to the mesh required. Dry or damp sand can be handled in any tonnage desired in ranges from 30 mesh and finer to eliminate screen in the production of intermediate sizes.

The de-dusted sand of proper mesh is then inter-blended with the screened sand or aggregates in the proper proportions providing aggregates that meet specifications.

Sturtevant Air Separators are fast and accurate. They increase production of aggregates, cut production costs.

Investigate Sturtevant Air Separators for your jobs. Write for details, today.

STURTEVANT MILL COMPANY

104 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

One of a Series

from Western Precipitation Corporation — pioneers of the commercial application of COTTRELLS *and now selling* COTTRELL *recovery equipment in all parts of the U.S.A. and foreign countries.*

Important points to know about COTTRELL *Electrical Precipitators*

A COTTRELL Electrical Precipitator is a major plant investment. Once installed it is operated over a period of many years, *thus multiplying year after year the benefits of top notch design and installation.*

And because of the many factors affecting the operating and collecting efficiency of a COTTRELL Precipitator, probably in no other field do the experience and "know-how" of the organization designing and installing the unit play a more important role in influencing the overall performance of the installation. That is why it is so important to remember this fact . . .

Western Precipitation Corporation is the organization that installed the first successful* COTTRELL *Precipitator over 39 years ago, still operating efficiently . . . and has consistently developed new refinements, new techniques, new applications that today have made it world famous in the science of recovering dusts, fly ash, mists, fogs and other suspensions from gases.

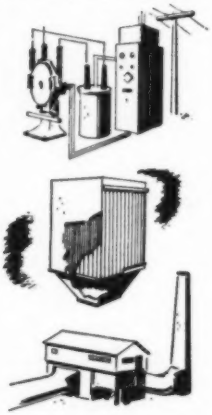
This is the first of a series of advertisements briefly outlining the important elements that go to make up a COTTRELL installation. Only long experience coupled with highest engineering ability, can assure the proper combination of these elements into a COTTRELL installation best suited to *your particular requirements*!

Basically, a Cottrell Precipitator consists of three major divisions each in turn consisting of many separate elements . . .

1. THE ENERGIZING SYSTEM, as its name implies, is the portion of the unit wherein the power is brought in, the voltage stepped up, then rectified to provide the unidirectional high voltage current supply for the Electrode System.

2. THE ELECTRODE SYSTEM consists of the high-tension ionizing electrodes and collecting electrodes through which the suspension-laden gas is passed to be cleaned. These electrodes can be of various designs, shapes and patterns and are equipped with various "rapper" arrangements which assist in keeping the electrodes clean of recovered materials.

3. THE HOUSING OR SHELL includes the structure containing the Electrode and Energizing Systems as well as the gas ducts and distributing system, the hoppers for receiving the collected material and other miscellaneous equipment.



Each of these three major divisions, together with their many individual parts, must be carefully engineered into ONE integrated and precisely-balanced unit to provide the successful and continuously-operating COTTRELL Precipitator. This series will take these major units apart to show in greater detail how the individual parts function and the varying types of design and construction. Watch for them.

10 COTTRELL ADVANTAGES

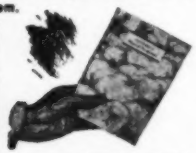
that make Cottrells unsurpassed for all types of recovery problems, hot or cold, wet or dry

1. **LOWEST DRAFT LOSS** — only a few tenths of an inch w. g.
2. **LOWEST POWER COST** — only ½ to 1 kwh. per 100,000 cu. ft. of gas cleaned.
3. **LOWEST MAINTENANCE COST** — all metal, few moving parts, no fire hazard.
4. **LOWEST LABOR COST** — operation can be fully automatic, if desired.
5. **LONGEST LIFE** — early Cottrell installation still operating after 39 years of continuous service.
6. **HIGHEST EFFICIENCY** — recovery efficiently approaches 100%, is desired.
7. **UNIVERSAL APPLICABILITY** — recover any suspension, solid or liquid — in any gas — over wide temperature ranges.
8. **ANY CAPACITY** — handle a few c.f.m. — or millions — with equal ease.
9. **MAXIMUM FLEXIBILITY** — readily adaptable to varying installation requirements.
10. **LOWEST OVERALL COST** — cost less per year of service, less per ton recovered. Often pay for themselves in a few months — always within a few years.

WESTERN Precipitation CORPORATION

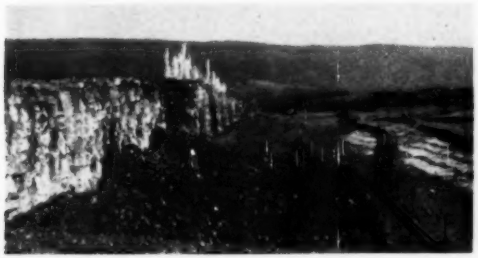
ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1015 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 LaSALLE ST. BLDG., 1 N. La SALLE ST., CHICAGO 2 • HOBART BUILDING, SAN FRANCISCO 4, CALIFORNIA
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL



Do You Have This Helpful COTTRELL Booklet? In 28 pages of interesting charts, illustrations and descriptive data, it answers many of the questions engineers ask about COTTRELL design and construction. Send for your free copy. Ask for Bulletin C103!

These new twenty-five pound container-cartridges, strapped in units of two, are unloaded quickly . . . ready for use in a matter of minutes.



Start of the blast using American's new container-cartridge.

The stone is down, well-broken and evenly-disposed for easy pick-up.

easy handling...

sure shooting...

good breakage...

with AMERICAN'S new 25 lb. container-cartridge

American Explosives' new twenty-five pound container-cartridge, strapped in bundles of two for handling, is fast becoming a favorite with experienced shooters. They particularly like its easy handling, quick loading and sure firing and that the blasting area does not have to be picked over for empty cases before shooting.

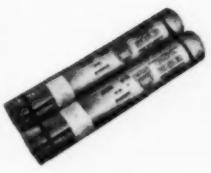
And there are other advantages, too. Like all American Explosives, this new cartridge has the quality and dependability that can only be obtained from the right combination of intensive research, strict laboratory control and modern production methods.

Available in a wide variety of strengths, velocities and densities, Cyanamid's American Explosives are ready to work for you . . . make your next order American.

Capable Field Engineers Are Available at Your Call

High Explosives • Permissibles • Blasting Powder • Blasting Accessories

AMERICAN CYANAMID COMPANY
EXPLOSIVES



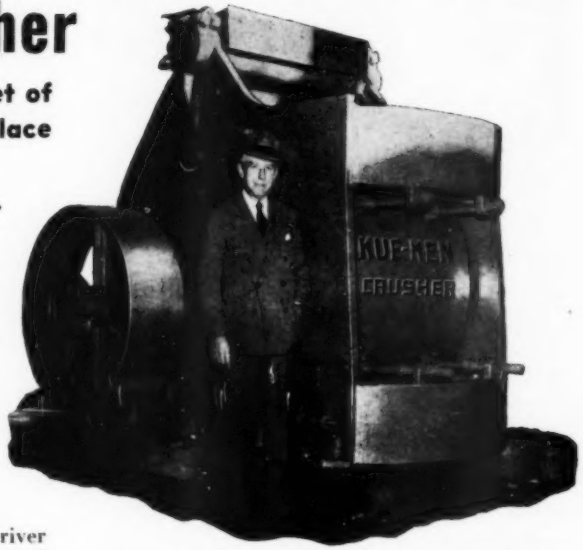
AMERICAN Cyanamid COMPANY
Explosives Department
30 ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

SALES OFFICES: PITTSBURGH, PA. • BLUEFIELD, W. VA. • SCRANTON, PA. • CHICAGO, ILL. • POTTSVILLE, PA. • MAYNARD, MASS.

Savings In Jaw Plates Will Pay For Kue-Ken* Crusher

If Your Crusher Wears Out a Set of Plates in 30 Days or Less Replace Now With a

KUE-KEN CRUSHER.



Above is shown a 42" x 27" Kue-Ken. Capacity 250-350 tons per hour. Only 60 H.P. required. Weighs 30,495 lbs.

Yes! The savings in jaw plate replacement will pay for your new Kue-Ken. In addition you will receive 25-50% more capacity because normal crushing speed is 375 strokes per minute. Less power is required . . . high speed makes a finer, more uniform product with less "flats".

Only Kue-Ken Crushes Without Rubbing

That is why jaw plates last 5-10 times longer. One operator reports 32 months with one set of jaw plates crushing hard river gravel. A neighboring plant wears out a set of jaw plates every 30 days in an overhead eccentric type crusher.

Other Features

Lubrication required only twice yearly. All mechanism runs in a sealed filtered "crankcase type" oil bath. No oil cans or grease cups. Automatic safety device for tramp iron and overload quickly reset. No shearing or breaking parts.

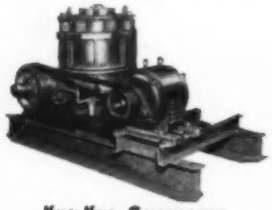
Longer Jaw Plate Life and Bonus Capacity gives lowest cost crushing to Kue-Ken users.

LET KUE-KEN WORK FOR YOU

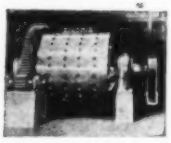
Sizes 12" x 7" to 48" x 60"

Get Complete Facts — Write for Bulletins

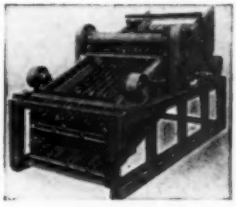
CALIFORNIA: (Southern)—Migula & Co., Pasadena. TEXAS: Closner Equipment Co., San Antonio. UTAH: Lund Machinery Co., Salt Lake City. WASHINGTON: Seattle—Washington Machinery and Storage Co.; Spokane Construction Equipment Co. OREGON: Portland—Edward L. Kropp Co., Medford Cal-Ore Machinery Co. MEXICO: Anahuac Machinery Co. S. A.



Kue-Ken Gyracones



Rib-Cone Ball Mills



Overstrom Screens

*Pronounced Que-Ken. U.S. and Foreign Patents Pending.

450 CHESTNUT ST. • OAKLAND 20, CALIFORNIA

STRAUB MFG. CO.

Kue-Ken Balanced Crushers	Rib Cone Ball Mills	Overflow Classifiers
Kue-Ken Simplex Crushers	Concentrating Tables	Feeders
Kue-Ken Gyratory Crushers	Overhead Eccentric Crushers	Screenwheel Classifiers

Pennsylvania Crusher Co., Exclusive Licensed Eastern Manufacturer and Distributor Broad and Arch Streets, Philadelphia, Pennsylvania.

Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd., Authorized Licensed Manufacturer and Distributor Close Works, Gateshead-upon-Tyne, England.

NO. 2 OF A SERIES ON HOW TO

Stretch a MULTIWALL Paper Bag

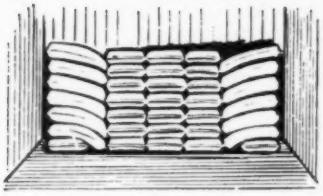
Kraft paper supplies are short. So it is important for you to get the best use from your multiwalls. Here is one way to stretch them . . .

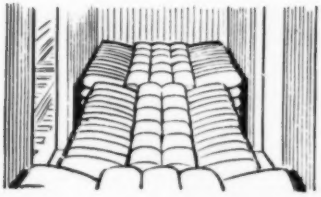
PROPER CAR LOADING

PREPARATION IS IMPORTANT

Cars should be clean, dry, and free from protruding nails or other projections. Remove all dirt, dust, rocks and grit from floor and walls. Remove loose nails and cover loose bolts with cardboard or several thicknesses of car liner. (Picture shows how to use straight-edge board to locate protruding nails, etc.)

Cover floor with good grade of car liner and put at least three thicknesses on door edges. Line walls, too, if they are in bad condition. Use asphalt-laminated paper to seal door cracks against dirt, rain, snow and cinders.





FOLLOW THESE LOADING RULES:

1 The car should be loaded so that the filled bags will not come in contact with side doors.

a. Use a good grade of dunnage in the doorway or steel strapping covered with corrugated board.

b. Follow proper loading patterns. (See illustrations.)

c. Use retaining strips of special Scotch tape applied across the load, or steel retaining straps covered by one thickness of corrugated board.

2 Bags should be loaded tightly, solidly and flat, to minimize shifting in transit.

3 Balance the load so there will not be more weight on one end or side than on the other end or side.

There are, in general, three different methods of loading—crosswise, brickwall and lengthwise. The crosswise method is generally considered to be the most acceptable.

Loading in car doorways should be done in such a manner that this part of the load acts as a keystone between the loads in the ends of the car. (See illustration.)

Want the Whole Story?

Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

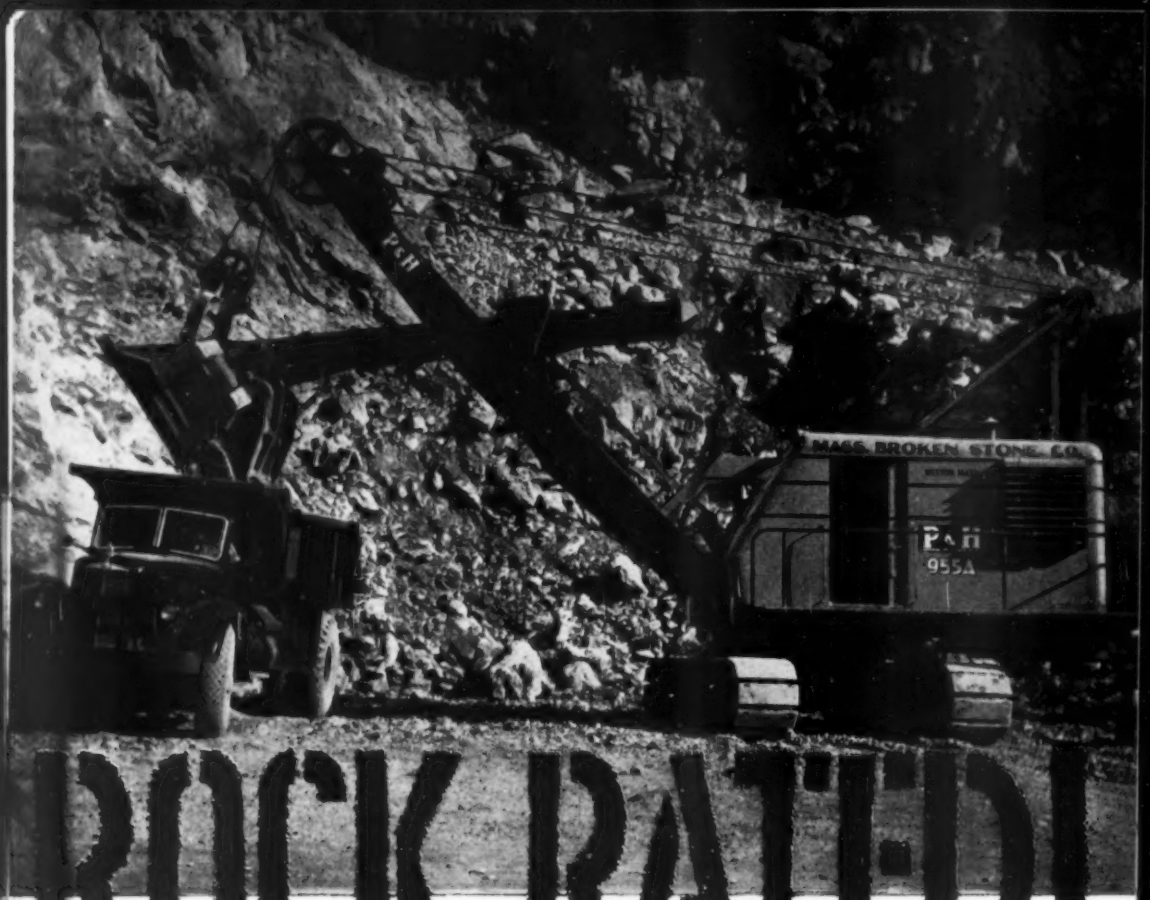
• • •

Maybe Cotton Bags are Your Answer . . . if you can't get all of the multiwalls you need. Cotton bags are available . . . and Bemis is the leading cotton bag source.

Bemis

BEMIS BRO BAG COMPANY

St. Louis 2, Missouri



ROCK RATED!

TO GIVE YOU MORE YEARS OF PROFIT

P&H MAGNETORQUE* ELECTRIC SWING

SAVES YOU TIME, TROUBLE, MONEY!

Bring on your heaviest going! The 955-A is ready for it! It's the 2½ yd. companion of the famous P&H 1055 — with all its proved engineering — tough all-welded construction — greater stability — live roller circle — adjustable hook rollers — and many other advancements that assure years of hard service with minimum cost.

Operating advantages? More than you've ever known in a machine of its size. Magnetorque Swing does away with the old swing frictions — with all their headaches — forever. It's faster — 15% to 25% faster.

Ask us where you can see one in operation. Learn what "ROCK RATED" really means.

*T. M. of Harnischfeger Corporation for electro-magnetic type clutch.

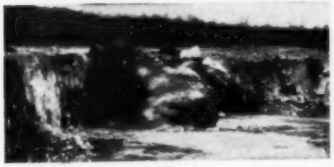
P&H
EXCAVATORS
4451 West National Avenue
Milwaukee 14, Wisconsin
HARNISCHFEGER
CORPORATION

EXCAVATORS • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • CRAWLER AND TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES

Just before the blast.

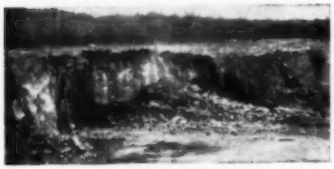
The holes begin to fire . . .

and the blast progresses . . .



across the face . . .

without spurts of wasted gas.



A well-shot pile!

Machine Gun Camera Tells the Story

Rockmaster ***at work in Kingston Trap Rock Company Quarry, Kingston, N. J., proves blasting control whether your job is coal mining, stripping, quarrying or construction.***

Twelve holes eighty feet deep were loaded with 9028 pounds of explosives—Apex #4 MV and 75% Giant Gelatin. Spacing was twenty feet; burden eighteen feet. Because it was important to minimize noise and vibration, ROCKMASTER milli-second delay detonators Numbers 1 through 12 were detonated at the bottom of the holes.

The quarry operator reported that even though this was a larger blast than he normally fired, no complaints about noise or vibration were received. And the photos show that breakage was *good!*

Ask your Atlas representative to show you the picture presentation of the ROCKMASTER story. He will show you through the eye of the machine gun camera how *you* can profit by using the correct numbers of the *sixteen* ROCKMASTER milli-second delay detonators teamed with the ROCKMASTER system of explosives choice and loading methods.

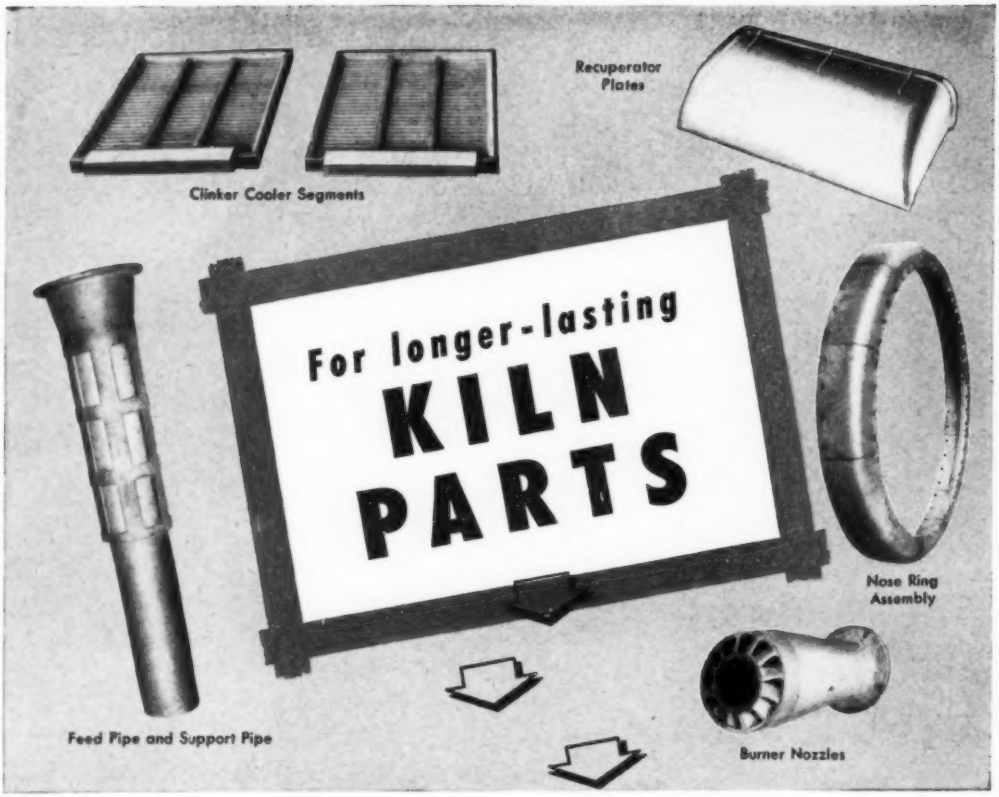
ROCKMASTER: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • ***Offices in principal cities*** • ***Cable Address—Atpowco***



Other Thermalloy Uses in the Cement Industry

- Chain, conveyor, clinker, drag
- Cooler lifters, spouts, grating, side plates
- Dampers
- Kiln end rings, feed chutes, hangers
- Kiln shell segments
- Slurry feed pipes

Investigate THERMALLOY*

Thermalloy has proved in hundreds of kiln installations that it can take heavy loads and rough usage... resist corrosive gases, excessive heat (up to 2100°F) and abrasives.

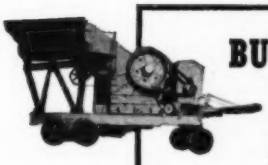
Thermalloy is not just one alloy. It is a *group* of alloys, each developed to meet a specific heat and abrasion problem.

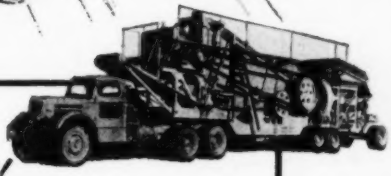
An Electro-Alloys engineer can show you how Thermalloy kiln parts can give you *lower operating costs per hour* . . . assist you in selecting the design best suited to your needs. Call your nearest Electro-Alloys office, or write Electro-Alloys Division, 2135 Taylor Street, Elyria, Ohio.

*Reg. U. S. Pat. Off.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

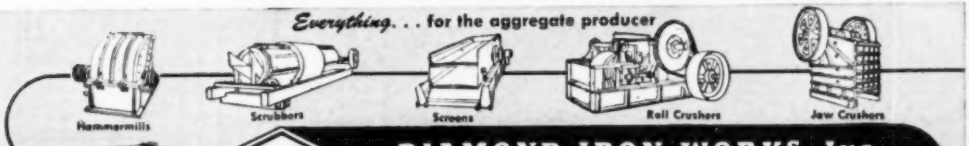




BUILT...to keep you in business...at a Profit!

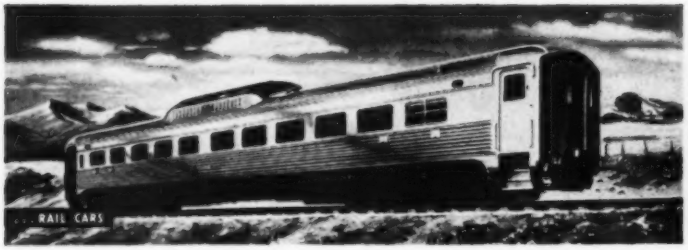
Diamond equipment shortens material flow, jumps output, gives you more for your money. Crushing, screening, washing and loading of rock, gravel, aglime and concrete aggregates are best done by Diamond. Before you specify or buy, see your Diamond Distributor. Or write for illustrated literature.

Everything... for the aggregate producer



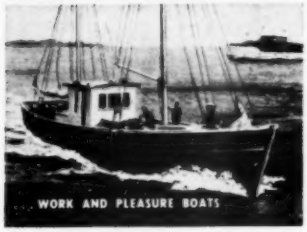
DIAMOND

DIAMOND IRON WORKS, INC.
AND THE MAHR MANUFACTURING CO. DIV.
1756 N. 2ND STREET, MINNEAPOLIS 11, MINNESOTA



This is the Diesel

that speeds the big jobs



HERE IT IS—the newest member of the General Motors Diesel family—the brawny 6-110 engine that develops 275 horsepower.

It is 50% more powerful than the famous 6-cylinder GM "71" engine that powers so many trucks, buses, boats, construction equipment and other mobile, portable and stationary units.

This rugged new Diesel doesn't care what's tied to its tail. It has power to spare to keep big jobs humming, yet is so compact it doesn't hog space.

For example, each new Budd RDC rail car is driven by a pair of 6-110 Diesels with GM torque converter transmissions. The compactness of these power plants permits mounting them under the floor so that no revenue space is lost. These rail cars accelerate from standstill to 44 miles per hour in just one minute and have a top speed of 83 mph with a full load.

Like all other GM Diesel engines the 6-110 is two-cycle—delivers power on every piston downstroke. This advanced design cuts down Diesel size without sacrificing ruggedness; it insures fuel economy, lower maintenance costs, exceptional dependability and long life.

The GM 6-110 engine provides Diesel power at its best for heavy-duty jobs—not only for rail cars but in the largest mountain-type trucks, huge rock crushers, deep-sea fishing and pleasure boats, big pumps and compressors, mining and oil field equipment. *It is an exceptionally compact Diesel for its horsepower—an engine that gives remarkably fine performance in minimum space.*

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES . . . Up TO 275 H. P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS . . . Up TO 800 H. P.

GENERAL MOTORS

Hear HENRY J. TAYLOR on the air every Monday evening over the ABC Network, coast to coast.

GM
GENERAL MOTORS
DIESEL POWER

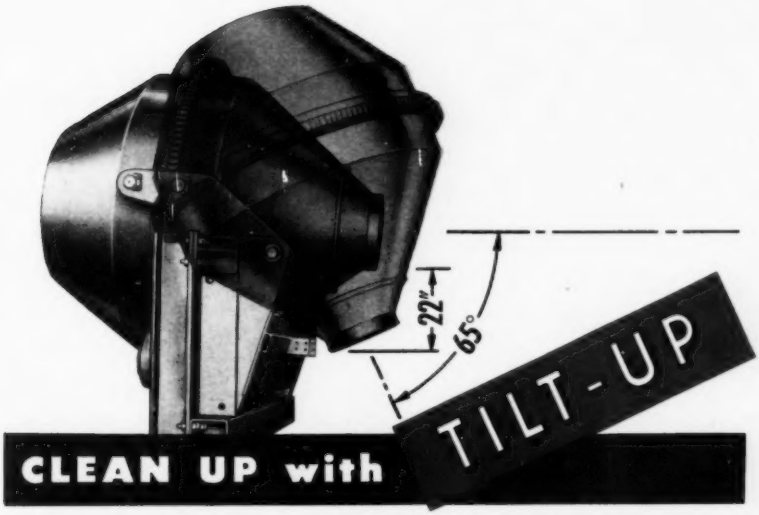
Only GM Diesels provide all these advantages

Compact size—less weight per horsepower . Two-cycle smoothness, power on every downstroke . Quick starting, on its own fuel . Unit injectors—no high-pressure fuel lines . Rapid acceleration . Cleaner burning . Better high-altitude performance . Easy accessibility.

"Your Key to Power Economy"

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT & QUARRY



CLEAN UP with TILT-UP

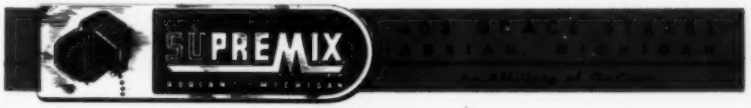
Only the SuPREMIX TILT-UP, 3-3½ yard hydraulically controlled mixer can give you *all* these advantages: lower headroom requirements—steeper discharge of 65°—no segregation—reduced thrust—and virtually fixed discharge. The hydraulic system is part of the unit—no costly compressor to buy. The unique features of this mixer make it the ideal mixer . . .

FOR CONVERTING TO CENTRAL MIX—As it requires less headroom, the TILT-UP SuPREMIXER is the only mixer feasible in most plants. It's easy to install, no raising of the plant or lowering of drive.

FOR A PACKAGE PLANT—Reduced headroom requirement means reduced height, construction and power costs. Efficiently permits dry batch in one lane, central mix in the other.

FOR A SEMI-PORTABLE PLANT—Crane feeding is easy with SuPREMIX. Separate A-frame mounting with bin structures bolted for quick, easy set-up provide real flexibility for your rush defense jobs.

New TILT-UP Bulletin shows complete details; write today.



THE PUBLIC BE *PLEASED!*

HERE'S WHY THEY ASK FOR 'INCOR'

Roanoke, Like Many Other Well-run Cities, Repaves with 'Incor' —Saving Motorists' Time and Tempers

● Closing a busy street like Salem Avenue in Roanoke, Virginia, for repaving can be a prolonged headache for motorists, a serious trade loss for merchants. But not if the city follows a policy of the public be PLEASED:

Like John L. Wentworth, Roanoke's Director of Public Works, who used 'Incor' 24-Hour Cement for repaving busy Salem Avenue from Jefferson Street, W., to Second Street, S. W.

Placed one day, 'Incor' concrete carried heavy mixer trucks the next. Result, Mr. Wentworth estimates a saving of 45 days' traffic tie-up.

Salem Avenue is typical of many a busy main stem the country over. With 'Incor', motorists praise the foresight of progressive city fathers . . . merchants save sales that would otherwise be lost.

Good news for taxpayers, too . . . because dependable 'Incor'* high EARLY strength saves at the go in . . . dependable high ULTIMATE strength saves tax outgo, through extra years of maintenance-free service.

Performance like this explains why Ready Mix Operators make 'Incor' concrete available as part of their good service. Users KNOW they can depend on 'Incor', America's FIRST high early strength portland cement.

*Reg. U.S. Pat. Off.

ROANOKE, VIRGINIA, SALEM AVENUE REPAVING
Engineers: CITY OF ROANOKE ENGINEERING DEPARTMENT
JOHN L. WENTWORTH, Director of Public Works
H. C. BROYLES, City Engineer
Contractor: PIONEER CONSTRUCTION CO., INC., Roanoke
Ready-Mix 'Incor' Concrete: CONCRETE READY MIXED CORPORATION, Roanoke

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. • BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON • INDIANAPOLIS
KANSAS CITY, MO. • NEW ORLEANS • NEW YORK • NORFOLK • PHILADELPHIA • RICHMOND • ST. LOUIS • WASHINGTON, D.C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,000,000 SACKS ANNUAL CAPACITY

NEWS OF CONCRETE MANUFACTURERS

Indiana Ready-Mix Firm Wins Suit vs. Union—"Discriminatory" Charge

Damages totaling $21,000 were awarded at Columbia City, Ind., on October 4 by a circuit jury to Builders Concrete, Inc., of Muncie, Ind., in a suit charging conspiracy in restraint of trade. The effect of the decision may invalidate provisions in union contracts giving laborers differential wage scales for handling ready-mixed concrete.

The suit, directed against the Hod Carriers Union (AFL) of Muncie and others, charged the defendants with forcing Builders Concrete to sign a contract assuring a "discriminatory" upped wage to union members handling ready-mix in construction jobs. It was declared that the union, by supporting the clause, interfered with the distribution of ready-mix and in so doing formed a conspiracy in restraint of trade. The contract which precipitated the suit guaranteed common laborers $1.40 per hour in construction work, but raised the scale to $1.75 an hour for handling ready-mixed concrete.

Don Milewski Is Victim Of Fatal Motor Accident

Tragedy struck for the second time within a few weeks in the Milewski family on September 29. On that day Don Milewski of the Lith-I-Bar Manufacturing Company lost his life in an automobile accident near Gary, Ind. He was returning from Chicago to his home after having conducted a meeting of Lith-I-Bar licensees. At this gathering he had substituted for his father, the late Frank Milewski.

It was on August 12 that the elder Milewski was drowned while boating with Mrs. Milewski on Lake Michigan. (See PIT AND QUARRY, September issue, page 174.)

Second Camgros R-M Plant Opened at San Rafael, Calif.

The Camgros Gravel and Fuel Company's new ready-mixed concrete plant at San Rafael, Calif., described locally as "the biggest north of San Francisco", recently went into operation as the firm's second installation in that city.

Aggregate storage bins at the new facilities contain 500 tons, and each of the twin cement silos has a capacity of 750 bbl. A 24-in belt conveyor takes aggregates to the tower. Semi-automatic control regulates the batching operations, a fact which enables the operator to maintain an hourly output of 100 cu. yd.

The plant was designed and manufactured by the Noble Company of Oakland. Mario Cerri, who has been with the firm for 11 years, is superintendent.

Everett E. Knott Appointed Texas Industries Sales Chief

Everett E. Knott of Dallas, Tex., has been appointed general sales manager of the newly-organized Texas Industries, Inc. (See PIT AND QUARRY, October issue, page 149.)

Mr. Knott was for 20 years associated with the Lone Star Cement Corporation and was sales manager for the Indiana Division of that firm when he resigned in 1946. He joined Texcrete Company of Dallas, an affiliate of Texas Industries, last February.

Lightweight Roofing Tile Made in New Oregon Plant

Production is in full swing at the new facilities of the Baessler Tile Company at Bend, Ore. The lightweight roofing tile, made of pumice, sand, and cement, is turned out by a tile-making machine which is said to be the second of its kind installed in this country.

According to owner M. K. Baessler, present capacity is 3,000 tiles per day; but if business warrants expansion next spring, the current volume can be doubled. Mr. Baessler stated that the product of his plant is lightweight, waterproof, and "permanent" and that it is available in white or red.

Frederick H. Schroedel, 57, construction engineer with the Raymond Concrete Pile Company, New York, for the last four years, died August 21 at his home in Roselle, N. J.

Coming Events

November 26-27, 1951—Chicago. Convention of National Association of Silo Manufacturers. Palmer House.

February 11, 1952 (week of)—Chicago. 22nd annual convention and exhibit, National Ready Mixed Concrete Association. Stevens Hotel.

February 18-20, 1952—New York. 32nd annual convention, National Concrete Masonry Association. Hotel New Yorker.

New Building Dedicated At Annual Convention Of Wilbert Association

On October 9 and 10 the Wilbert Manufacturers Association, comprised of a group of licensee concrete burial vault producers, held its sixth annual convention in Chicago. Sessions were scheduled at the LaSalle Hotel on the first two days; on the third day the meetings were moved to the Wilbert W. Haase Company's new warehouse and machinery building at Broadview, Ill. This new building, dedicated during the convention, occupies an area of 165,000-sq. ft. The Wilbert W. Haase Company is the licensor for all Wilbert concrete burial vault manufacturers.

At the convention the following slate of officers was accepted for the current fiscal year; president, Paul L. Keating, Keating Wilbert Vault Company, Springfield, Mass.; vice-president, Frank C. Bowen, Wilbert Burial Vault Company, Atlanta, Ga.; treasurer, C. F. Sloan, Kansas City Wilbert Vault Company, Kansas City, Mo.; secretary (re-elected), George J. Kloppenburg, president of the Wilbert W. Haase Company, Forest Park, Ill.

Eschenbrenner Announces Second Annual Contest

Officials of the Universal Concrete Pipe Company, Columbus, O., has announced its second annual "Eschenbrenner Awards" competition.

Entries will again be limited to senior civil engineering students in colleges and universities east of the Mississippi. Three $500 awards are offered, including one each in the Central, Southern, and Eastern districts.

Subject matter of the papers must relate to nonmonolithic concrete products. An illustrated brochure issued by the firm lists a number of suggested current problems.

Deadline for entries is March 31, 1952. Papers will be judged by an award jury of practicing engineers. Winners will travel to Columbus as guests of the company.

Billy T. Sumner has joined Universal Concrete Pipe Company as an engineering representative in areas covered by Universal's Nashville, Tenn., plant and the Dixie Concrete Pipe Company, Louisville, Ky. He was formerly with a firm of consulting engineers in Nashville.

Bob Utter, 18, an employee of Penny's Ready-Mix Concrete Company of Emporia, Kan., died of suffocation after he was carried into an under-track pit by sliding sand.

Vincent P. Ahearn Honored At Industry Dinner Given By S. California Producers

Nearly 150 aggregate producers, ready-mixed-concrete operators, and invited guests gathered at the Biltmore Hotel in Los Angeles on the evening of September 12, 1951, for an industry dinner honoring Vincent P. Ahearn.

Mr. Ahearn, well-known executive secretary of the National Sand & Gravel Association and the National Ready Mixed Concrete Association, with headquarters in the nation's capital, had stopped over in Los Angeles on an annual trip which carried him through the Far West on association business. Each year the Southern California Rock Products Association and its affiliate, the Southern California Ready Mixed Concrete Association have arranged a similar festive event in honor of his visit.

Robert Mitchell, president of the Consolidated Rock Products Association, Los Angeles, served as master of ceremonies. Guests from Arizona and New Mexico, Eugene Sundt and Ward Anderson (Albuquerque Gravel Products Company) and John Fisher and E. O. Phleger (Superior Sand & Gravel Company, Phoenix) were also at the speakers' table.

Following the dinner, Mr. Ahearn spoke briefly, taking his listeners behind the Washington political scene for an intimate and revealing story of how the government is functioning in these times of national crisis. He also cited the rapidly increasing population trend as indicative of a continued construction boom for many years to come. This trend is causing considerable concern, since it involves the possible exhaustion of our natural resources, including sand-and-gravel reserves. Mr. Ahearn predicted that allowance of percentage depletion in this industry is quite likely, and in the not too distant future.

Guests representing a dozen or more southern California nonmember producers were introduced. Bakersfield, San Bernardino, Riverside, San Diego, Culver City, Inglewood, and Beverly Hills were among the cities represented.

The membership of the host associations was out in full force for the occasion. Operating and administrative heads —as many as 14 from one company— were gathered about the dinner tables. The roll call revealed the following Los Angeles area organizations in attendance:

Arrow Rock Company; Azusa Rock & Sand Company; S. H. Bacon Materials Company; Blue Diamond Corporation; California Materials Company; Chandler's Palos Verdes Sand & Gravel Company; City Rock Company; Consolidated Rock Products Company; Glendale Ready Mix; Graham Bros., Inc.; Livingston Rock & Gravel Company; E. Lockett & Son; Manning Bros. Rock & Sand Company; Owl Rock Products Company; Edw. R. Sidebotham & Son; Transit Mixed Concrete Company and Western Concrete & Equipment Company.

Report Okays Accelerated Drying For Properly Cured Masonry Units

Properly cured concrete masonry units can be dried with radiant or convected dry heat at temperatures up to 240 deg. F. without significant loss of compressive strength, according to a comprehensive technical report which the National Concrete Masonry Association has just released to its members. Studies conducted in the plants of member firms indicate it is of the utmost importance that the units be thoroughly cured *before* they are subjected to accelerated drying at elevated temperatures, since there can be little or no gain in strength after the concrete has been dried to a low moisture content.

The report emphasizes the importance of avoiding excessively fast drying rates, and points out that the possibility of damaging the concrete is materially reduced if moderate drying temperatures (in the range of 180 deg. F. or less) are employed. It warns that there may be serious loss in compressive strength and other harmful results if inadequately cured units are exposed to dry heat for an appreciable period of time. Since there may be combinations of materials, drying temperatures and other factors which could produce unfavorable results in elevated temperature drying, it is suggested that producers conduct pilot tests before installing costly, permanent drying systems.

Compressive strength test data are presented in the report for seven groups of units made of various types of aggregates, including sand and gravel, expanded slag, and cinders. Specimens were oven dried for eight hours at 120, 180, and 240 deg. F., and their compressive strengths at 28 days compared with control groups which were identically cured but not dried. Units were manufactured and cured in accordance with the regular practice of the several plants which cooperated in the tests, but in no case was the curing period less than 12 hours or the maximum curing temperature less than 150 deg. F. The data show little or no strength loss due to oven drying for cinder, sand and gravel, and expanded slag units, and in some instances slight increases are indicated.

The test data were developed at the plants of the following N.C.M.A. member companies: Janesville Sand and Gravel Company, Janesville, Wis.; Best Block Company, Milwaukee, Wis.; Cleveland Builders Supply Company, Cleveland, O.; Plasticrete Corporation, Hamden, Conn.; and Standard Building Products Company, Detroit, Mich.

Officials of the Carney Co., Inc., Mankato, Minn., have announced three new dry, ready-to-use concrete and mortar mixes which are on the market under the trade name of "Handicrete." Packaged in sizes for small jobs, the mixes need only the addition of water.

The American Concrete Pipe Association has announced the dates of its Short Course—November 26, 27, and 28. Sessions will be held at the Edgewater Beach Hotel in Chicago. The course is given for employees of member companies. It is planned to make this an annual affair.

• Scene at the industry dinner given by 150 producers in honor of Vincent P. Ahearn in Los Angeles.

Builders Supply Corp. Utilizes Unique Ads To Feature Superlite

Reproduced on this page is an original advertisement series prepared for the Builders Supply Corporation of Phoenix, Ariz., which operates what is believed to be the world's largest plant for the production of concrete masonry units. Each ad uses an appropriate animal silhouette to symbolize a single important characteristic of the product. The ads were prepared by Advertising Associates, Phoenix, Ariz.

Organized only six years ago, Builders Supply now operates five block machines at the rate of 7,000,000 cycles per year on a three-shift basis. In the company's storage yard approximately 2,000,000 cubed units are "parked" to supply the growing demand. In the Phoenix area concrete block and concrete brick account for 75 percent of all construction.

Units 8- by 4- by 16-in. in size ("half high") are the most popular, although standard 8- by 8- by 16-in. block, concrete brick, Roman brick, and random ashlar units are also supplied. Pumice units far outsell the sand-concrete type.

Joseph J. Ryan, 65, president and treasurer of the Ryan Ready Mixed Concrete Corporation of New York, N. Y., died on October 7 at a hospital in Brooklyn. Mr. Ryan was also president and treasurer of the N. Ryan Company, Inc., makers and suppliers of concrete.

Operations were resumed recently at the Othello (Wash.) Cement Products plant, which was rebuilt and repaired after a fire that destroyed the old facilities in August.

Study Concrete Problems At Joint Meetings Held In L. A. and San Diego

A joint project of the American Concrete Institute, the Portland Cement Association, the Los Angeles chapter of General Contractors of America, the concrete industry of the Pacific Coast, and the University of California Extension School's engineering division held on October 26 in Los Angeles was a conference on practical concrete problems.

The non-technical discussions were led by a panel including the following: M. Erick, consulting engineer; C. A. McMahon, construction superintendent, J. T. Helsely, concrete technologist; C. D. Wails, contractor; S. Hobbs, field engineer for the P. C. A., and J. W. Kelly, University of California, Berkeley.

A similar conference, organized by the same sponsors, was put on in San Diego.

Thrifty
Superlite compares favorably in cost with less valuable building materials. Plus values include better insulation, lighter weight, longer lasting, more sound proof, more fire resistant. When you build or remodel, specify Superlite.
Strong
Superlite is super light . . . and strong! It exceeds all federal specifications and local codes or standards for crushing strength. When you build or remodel, specify Superlite.
Light
Superlite is approximately 30% lighter in weight than other building materials. Light weight walls mean greater speed in construction, lower labor costs and an extra safety factor for foundations. When you build or remodel, specify Superlite.
Silent
Superlite, because of its porous nature, absorbs 55% of sound waves. The same inert, dead-air cells that provide its excellent insulating qualities against heat and cold act as sound deadeners. When you build or remodel, specify Superlite.
Beauty
Superlite is specified more and more by fine architects in designing Southwestern homes and schools, churches, and commercial buildings. It permits varied and attractive architectural effects without resort to paint, plaster, facing, etc. When you build or remodel, specify Superlite.
Dry
Superlite is waterlight. It has no capillary action to draw water into the bricks and blocks. It is approved by FHA for unpainted, exposed wall surfaces. When you build or remodel, specify Superlite.
Lifetime
Superlite is durable. It lasts and lasts and lasts. Roman construction of the same materials, 2,000 years old, still stand. Identical building substances long have enjoyed wide use and acceptance in England, Germany, Japan, New Zealand, China, and other parts of the world. When you build or remodel, specify Superlite.
Insulation
Superlite has over six times the insulating value of standard sand concrete. A measurement of "letting heat through", or heat conduction, is called K factor. Comparable K factors: Superlite, 1.86; clay brick, 5.00; sand rock concrete, 12.00. When you build or remodel, specify Superlite.

• These Superlite advertisements appeared serially in the local Phoenix press. As can be readily seen, the attributes of eight birds and beasts are applied to Superlite units—thrifty (economical) as a squirrel, strong as a lion, light as a bird, silent (soundproof) as a giraffe, beautiful as a peafowl, dry (water-resistant) as a camel, durable as an elephant, and well-insulated as a turtle.

N.R.M.C.A. Board Discusses Issues Of National, Industrial Importance

THE semi-annual meeting of the board of directors of the National Ready Mixed Concrete Association, which was held on October 2, 1951, at The Greenbrier, White Sulphur Springs, W. Va., was one of the most successful yet held from the standpoint of attendance, important business, weather, and outside activities. Present were 17 of the 21 officers and directors—most of them with their wives—all of the seven members of the executive committee, and seven of the ten living ex-presidents. The subjects discussed covered recent Washington developments, the proposed group insurance plan, convention plans, the association's safety program, merchandising, engineering activities, etc. The National Sand and Gravel Association board held its meeting on the preceding day, and a joint meeting of the two boards was held on the following day.

Brief introductory addresses were made by Norman J. Fredericks (Koenig Coal & Supply Co., Detroit), president of N.R.M.C.A., and Vincent P. Ahearn, executive secretary. They pointed out the excellent financial condition of the association and the recent sharp increase in membership which makes this association more than ever truly representative of the entire ready-mixed concrete industry. Since January there have been 52 new active and 6 new associate members for totals of 501 and 71, respectively.

B. F. Devine (Chain Belt Co., Milwaukee), chairman of the Truck Mixer Manufacturers' Bureau, was unable to attend because of illness

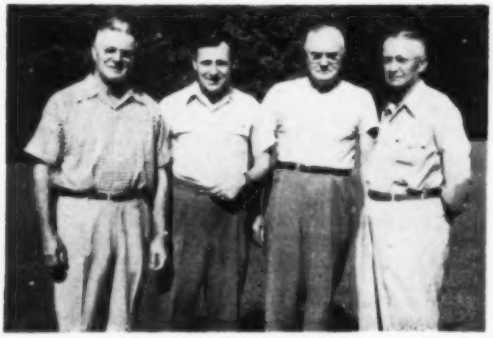
By WALTER E. TRAUFFER

but was ably represented by A. J. Frank and Richard Seaman of that company. They reaffirmed the bureau's chief aims of helping producers, constantly improving equipment, working closely with specification-writing bodies, and constantly advertising the meaning of and increasing the prestige value of the bureau's plate on a truck mixer body. It was expected that the shortage of steel would be alleviated in the second quarter of 1952, as structural requirements would then decline. In the meantime operators were urged to use their MRO ratings to get prompt delivery.

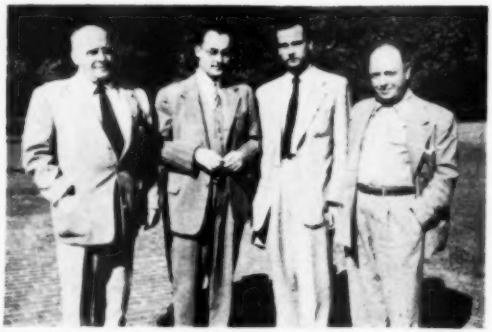
The report of the committee on group insurance outlined a plan developed, after much investigation and study, which was considered the most economical and best suited for those members of the industry not already covered. Most of the members, especially the smaller operators, had favored such a plan, and in February a committee was formed to investigate the subject. At this meeting the board voted to adopt the suggested plan and authorized the committee to proceed with it. Results of a questionnaire showed that about half the eligible member companies are interested in the plan.

This plan provides life insurance of $2,500 for executives and $1,000 for all other employees. The same benefits are provided in an accidental death and dismemberment clause which gives 24-hr., on- and off-the-job coverage. Also provided is a $20 weekly payment for sickness and accident disability. Hospitalization insurance is complicated by varying costs in different states, but the committee recommended $9 per day hospital and $180 total miscellaneous benefits for employees and $7 and $140 for their dependents, including maternity cases. Surgical benefits up to $200 and $5,000 insurance against polio were also suggested. There was much feeling that employees should contribute a part of the cost of this plan, one

• Floyd G. Rubey (Dubuque Ready Mix Concrete Co., Dubuque, Ia.) and C. W. Shirey (C. W. Shirey Co., Waterloo, Ia.).



• At the golf course: William Moore (J. P. O'Connell Co., Boston, Mass.); N. J. Fredericks (Koenig Coal & Supply Co., Detroit, Mich.); Stanton Walker (N.R.M.C.A.); and R. C. Collins (Warner Co., Philadelphia, Pa.).



• Left to right: Frank L. Kelley (Colonial Sand & Stone Co., New York); A. J. Frank and Richard Seaman (Chain Belt Co., Milwaukee, Wis.); and J. B. Donovan (Valentine Concrete Co., Springfield, Mass.).

• Mr. and Mrs. R. S. Barneyback (Henry J. Kaiser Co., Oakland, Calif.).

• Mr. and Mrs. R. F. Porter (Harry T. Campbell Sons' Corp., Towson, Md.).

• Mr. and Mrs. Harry F. Thomson (Material Service Corp., Chicago, Ill.).

suggestion being that the employer pay the cost for the employee and the employee pay the cost for his dependents. This procedure, it was explained, would meet the requirements in every state, and the plan does not duplicate any state compensations.

A brief report was given on the meeting of the Ready Mixed Concrete Advisory Committee held in August, which made many recommendations to OPS. One of these was that ready-mixed concrete producers be permitted to reflect increased costs of out-of-area cement, and an order to this effect—SR66-GCPR—was issued, effective October 2, the day of this meeting. For various reasons, the demand for cement this year has been very spotty, creating shortages in some areas; and many producers have been forced to ship in cement from distant plants at much higher cost in order to supply concrete for large defense projects. These added costs have been as high as $2.00 per bbl., in some cases completely wiping out the profit from a job. SR66-GCPR is designed to alleviate this situation and facilitate the flow of cement to urgently needed construction. An account-keeping procedure is provided in the regulation, and a seller must determine the weighted average unit cost of in-area cement during a current representative quarter and the added cost of out-of-area cement in arriving at the amount he is to add to his present ceiling price. It was pointed out that the cement industry and the sand-and-gravel industry are still under the General Ceiling Price Regulation.

With respect to the N.R.M.C.A. safety contest, it was stated that the winners would soon be announced. There has been greatly increased participation in the contest. It was felt that the presentation of the winners' trophies, furnished by PIT AND QUARRY, should be made more impressive, with each winner giving a brief talk on his safety methods, etc. Mr. Ahearn, in urging even wider participation in the contest by members, stressed the high public relations value of the contest, especially to those companies winning trophies or honorable mentions. He re-emphasized the fact that the employee attitude on safety reflects the attitude of the company heads.

Mr. Ahearn also reported on the position of the industry with respect to the procurement of MRO and minor capital additions, and major capital additions which are under the jurisdiction of the Building Materials Division of NPA. He said that any member needing an increased quota should ask for it. He urged that everyone applying for capital additions contact the association and warned that these are very hard to get. He also said that the shortage of controlled materials will last at least 18 months and that shortages of some materials may be worse than during World War II.

Stanton Walker, director of engineering of both associations, reported briefly on some matters pertaining directly to the ready-mixed concrete industry, and at the joint meeting went into matters of interest to both industries. There are, he said, no present incumbents for either of the association's two fellowships, primarily because the $750 annual stipend is too low. The board voted to combine both fellowships temporarily with a $1,500 stipend, in the hope that a fellow may be obtained for the second half of the school year.

Mr. Walker said that there is no recent information on the comparative efficiencies of truck and stationary mixers and that there is urgent need for later data. It was voted to bring this to the attention of the Truck Mixer Manufacturers' Bureau.

In commenting on truck weight restrictions, Mr. Walker stated that the Maryland test confirmed the obvious fact that the heavier the axle load the greater the damage to highways. He mentioned similar tests to be made by states and other bodies in various parts of the country. These will be more complete, including tests on flexible-type pavements as well as on concrete, and on the same types of bases. Some of these will be made in areas where weather, base, and other conditions are more typical of the country in general. According to Mr. Walker, this subject is now prominently before the public, and truckers may expect lower load limits and stricter enforcement. The trend in highway design, he indicated, is toward higher axle loads, the New Jersey Turnpike for example having a 40,000-lb. limit.

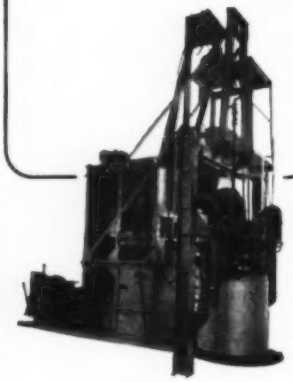
Regarding the Sixth Annual Short Course for Industry Technicians, to be held at the University of Maryland November 12 through 16, 1951, there have been more applicants than space. The tentative program for this course has been prepared. The classes are divided into three groups covering the testing and designing of concrete and related subjects from different slants, to meet the varying need of those attending. Particular stress will be laid on the application of test results to practical operation.

Mr. Walker stated that tests on various admixtures over a long period, including air-entraining agents and fly ash, have shown that these materials have unexplainable properties and that there is a wide variation in the results obtained with some of them. Any concrete to be

yes, you can preserve your capital . . .

Lease

this Universal Concrete Pipe Machine



★ You needn't lay out the purchase price to begin enjoying the production and profits of this great machine. Leasing arrangements are possible on terms that assure profitable operation. The Universal Pipe Machine has set new higher standards for efficiency. It makes more pipe and better pipe with fewer man hours. Because it true-tamps at the incredible rate of 680 strokes-a-minute, you use a drier mix, get stronger pipe that handles with less damage, requires minimum curing. One of the four sizes (5″-24″, 6″-48″, 12″-60″, 24″-72″) will meet your requirements. Ask about the *Universal Lease Plan.*

UNIVERSAL CONCRETE MACHINERY CO.
297 South High Street Columbus, Ohio

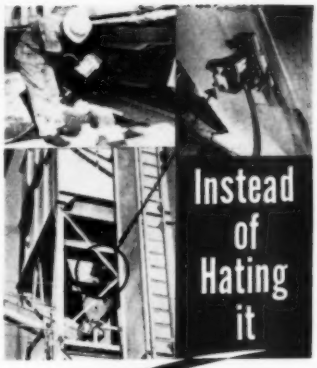
subjected to weathering should contain an air-entraining agent, whether fly ash is used or not. He also discussed an evaluation under way of different aggregates from different parts of the country with respect to weathering. Materials from many established sources will be subjected to freezing-and-thawing tests in order to determine their potential life in the field.

The effect of grading on the quality of concrete, said Mr. Walker, is being re-investigated, and other tests in progress include durability of concrete, effect of quantity of mixing water on resistance to freezing and thawing, etc. Regarding the last mentioned, he stated that, when saturated, richer concrete will break down under freezing and thawing faster than leaner mixes. He also commented on the fact that the cardboard cylinder molds being widely used often expand and absorb water at a period when the concrete has almost no strength, causing cylinder cracks and otherwise affecting the uniformity of cylinders. Mr. Walker stated that efforts are now being made to replace the various freezing and thawing methods in use, which vary widely in their results, with a method that will be representative of them all and will eliminate present conflictions. It is this type of work, he said, which not only benefits the industry but also gives the association a high rating with other bodies interested in the same subject.

At the joint meeting of the two boards on October 3, the plans for the 1952 joint annual convention and exposition were discussed. This meeting will be held at the Stevens Hotel in Chicago during the week of February 11. No details on the program are yet available, but producers can be sure that these two associations will provide interesting speakers on subjects important to the sand-and-gravel and ready-mix industries. Members have shown their preference for informal meetings, and program discussions will be led by men of the industries. Simultaneous programs of the two groups are unavoidable, but all information vital to both groups will be presented at joint meetings.

The exposition of machinery will be by far the biggest and best yet held and exhibitors will have their top experts in attendance to discuss producers' needs and problems. Ample time will be allowed in the program for visits to the exposition. There will be a number of luncheons but no evening formalities except the Manufacturers' Reception which will probably be held on Tuesday.

(*Continued on page* 209)



Start Vibrating It!!

. . . With Cleveland Air vibrators, like the Type LSRR and F, shown at work herewith.

It's easy to just get mad and say what's the use, but it's a lot easier to let these twins shake it loose.

They are double trouble-makers for your double-tough materials. They're doing a round-the-clock job in a lot of plants like yours.

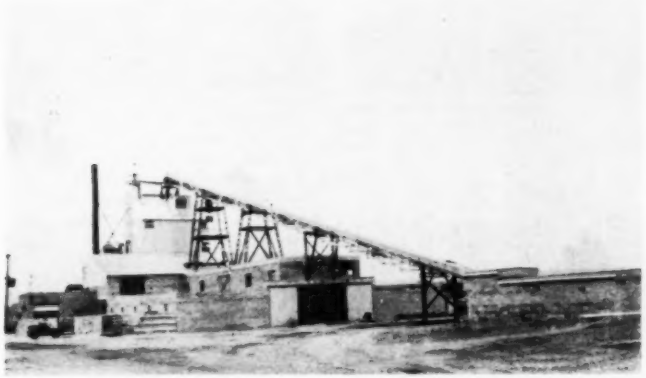
The LSRR is equipped with a cast steel male bracket which fits the female bracket that is standard equipment on most covered hopper railroad cars. Easily adapted to hoppers, bins, chutes, flasks, mine cars, etc.

The F is made in six sizes for bins containing from one to several hundred tons. The F will call a halt immediately to arching, plugging, and sticking. As shown, simply mount the vibrator on the skin of the bin, using a reinforcing plate. Type JN lever-type valve and automatic lubricator insure efficiency. Catalog No. 105 gives further detail.

THE CLEVELAND VIBRATOR COMPANY
2711 Clinton Ave. · Cleveland 13, Ohio

Standard Building Material's New Combined Block-Ready-Mix Plant

Well-engineered installation at South St. Paul Provides for company's long-range requirements



• A general view of the Standard Building Material Company's combined ready-mixed-concrete and concrete-masonry-unit plant at South St. Paul, Minn. The long inclined conveyor feeds separate storage systems for the two operations.

ONE of the most complete and elaborate of the recent installations in the concrete products industry is the combined ready-mixed-concrete and concrete-masonry-unit plant which went into operation at South St. Paul, Minnesota, early this year. The facilities are owned and operated by the Standard Building Material Company, a well-known concern which was founded in 1909 by the late Joseph Chalupa Sr.

The ready-mix department is at present equipped for batching operations only, but the design incorporates specific provisions for the installation of central mixing equipment at some time in the future. Similarly, the block plant, although initially equipped with just one automatic machine for the production of 750 to 800 units per hour, is laid out for the eventual operation of three high-production machines. Storage and handling facilities, steam generating capacity, and curing room space are all of such magnitude that the ultimate capacity (some 4½ million 8-in. equivalents per year) can be realized by the mere installation of additional mixers and block machines.

The plant is situated on a well-drained level tract created by filling in approximately six acres of swamp land on the west bank of the Mississippi River south of the city. Less than half a mile away, and on the same highway, the company operates its own crushing, screening, and washing plant for the production of sand and gravel. Materials are produced for general sale and for use in Standard's own ready-mixed-concrete and block operations.

By WILLIAM M. AVERY

Materials Handling Although the two plants were designed and built as a unit, they operate independently, sharing in common only the conveyor and elevator used for handling aggregates and cement and a ground-level hopper used for reserve storage. The latter serves to cushion both operations against unexpectedly heavy runs on any particular size of material and to lessen overall dependence upon regular truck deliveries. It has a total capacity of 200 cu. yd. in four equal compartments, and the various compartments are charged from a wide roadway over the top. Manually-operated clamshell gates in the bottom of the hopper permit the desired size of material to flow onto a 20-ft. run of horizontal belt conveyor, and this in turn discharges onto the long inclined conveyor which feeds the plant bins.

The hopper, the short feeder belt, and the lower portion of the main belt are fully enclosed in a concrete masonry building which is largely below grade. The floor, which is about 2 ft. below river level, is pitched to a sump pump to remove surface water, and steam is piped to the storage hopper to assure the free flow of materials in even the coldest weather.

The main belt is 24 in. wide and 356 ft. from center-to-center of pulleys, and it has a capacity of 150 cu. yd. per hour. It is set on an incline of 15 deg. and discharges into a turnhead which is about 70 ft. above ground level. The 5-ply U.S. Rubber belt is covered throughout its length, and steam lines provide heat end to end for operations in severe winter weather. The head assembly is a 30-hp. Barber-Greene unit; and head, tail, and take-up pulleys, as well as troughing idlers, were supplied by Diamond Iron Works.

Storage System The main turnhead is located over the bins which supply the ready-mix plant, the block plant bins being served by a separate turnhead to which the materials are fed by a short belt conveyor. Each production unit has a 5-compartment Butler bin which provides storage for approximately 180 cu. yd. of aggregates and 300 bbl. of cement. A separate bin installation adjacent to the ready-mix plant, and straddling the same roadway, will accommodate an additional 800 bbl. of cement. The latter supply may be used in two-stop ready-mix operations, for weigh batching into customer's trucks, or may be fed back into the cement-handling circuit and placed in either of the 300-bbl. overhead bins. The handling circuit consists of an undertrack hopper, a screw conveyor, and a fully-enclosed bucket elevator from which any one of the three storage points can be supplied. All of the aggregate bins are equipped with steam

• Closeup of the concrete batching plant. The bin in the foreground holds 800 bbl. of bulk cement which may be used in two-stop ready-mix operations, for weigh batching into customers' trucks, or re-elevated to the main supply bins.

coils for winter operations, and full stairways have been provided for the convenience and protection of the operating crew.

Cement Warehouse In addition to the four carloads of bulk cement which can be accommodated in overhead bins, warehouse space has been provided for approximately ten carloads of bagged cement. The warehouse is a separate 34- by 80-ft. concrete masonry building located south of the main plant and parallel to the 480-ft. railroad spur which serves the property. Generous overhangs above the front dock and over the doors which face the tracks provide excellent weather protection for both in and out loading operations.

A track hopper and a 76-ft. enclosed belt conveyor near the warehouse is used for transferring lightweight aggregates from hopper-bottom cars to dump trucks. These materials, which may be used in either ready-mix or block production, are hauled to the underground hopper at the opposite end of the property.

Block Plant The block plant was designed for gravity feed from the supply bins into the block machine itself, and it is believed to be the first installation in the area to include this feature. Materials are weighed accurately with a five-beam 2½-cu. yd. Butler batcher, and discharged into a 50-cu. ft. Besser mixer, which is mounted on a balcony above the block machine.

Masonry units are molded on a late model Besser Super Vibrapac machine equipped with a front pallet feed mechanism. Output averages between 750 and 800 8-in. equivalents per hour, and the units are loaded into 36-pallet steel racks, which are placed on turn tables in front of the machine. The loaded racks are transported to the curing rooms by a Clark fork truck.

Curing System The ten 20- by 35-ft. rooms for curing are arranged on either side of a 20-ft. wide aisle which connects the machine room with the storage yard. The walls, built of 8- by 8- by 16-in. masonry units, have mastic expansion joints at 12-ft. intervals, and the cores were filled with a 1:5 mix of grout. Excellent daylight is provided by a 22-ft. high monitor roof over the center aisle, and by 8-sq. ft. panels of glass block located in the end walls of the curing rooms.

Each of the ten curing rooms can accommodate 2,000 8- by 8- by 16-in. masonry units or their equivalent. The cycle of curing calls for a two-hour preset period before steam is introduced. The temperature is increased at a uniform rate over a five-hour period to the maximum of 160 deg. F. Holding and soaking periods account for the remainder of the 24-hour cycle.

Provisions have been made for ventilating the rooms, and they are equipped with individual moisture and temperature controls. The vertical doors, which were supplied by Universal Door Carrier Company, are balanced with heavy torsion springs. The floors of the rooms slope to the center aisle, which has a grate-covered drain running its entire length to carry off condensation.

Steam for curing, as well as for various heating purposes throughout the plant, is provided by a 200-hp. oil-fired locomotive boiler. It is housed in a separate 30- by 46-ft. building at the north end of the plant. Here also are located the distribution panels for the two plants, remote control switches, air compressors, water pump, and toilet facilities for the employees. Fuel oil for firing the boiler is stored in an 8,000-gal. underground tank.

Batching Plant The batching tower for ready-mix operations is located between the block plant and the railroad spur. All mixing is at present done in transit, but sufficient head room has been allowed for the installation of a central mixing unit at some time in the future. All materials are weighed automatically with a 4-cu. yd. Butler batcher, and there are two 1,000-gal. gravity-flow water tanks so that at need hot and cold water can be blended to any desired temperature. An automatic dispenser provides for accurate additions of Darex air-entraining admixture.

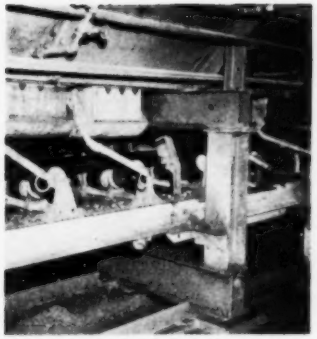
The batch control room is fully enclosed and insulated, and thermostatically-controlled forced-air unit heaters maintain comfortable temperatures during winter operations. One side of the room is cantilevered several feet out from the supporting columns to give the operator an unobstructed view of the roadway below. Daylight is provided by windows on three sides, and strategically-placed fluorescent light fixtures provide additional illumination in the working areas. The batching tower and all other buildings on the property are of fireproof construction.

An outside wash rack has been provided for servicing the truck mixer fleet. It consists of a slab large enough to accommodate four trucks, and each stall is flanked by a plank walkway supported on concrete block piers. Hot and cold water are piped underground from the boiler house, and overhead lights are available for night operations. Each unit of the fleet is thoroughly washed at the end of each work day, so that its appearance will at all times be a credit to the company. The present ready-mix fleet includes seven 3-cu. yd. Smith mixers and one 2-cu. yd. Jaeger unit mounted on International, Mack and Dodge chassis. An additional fleet of some 30 company owned trucks assures prompt delivery service on other materials produced by Standard.

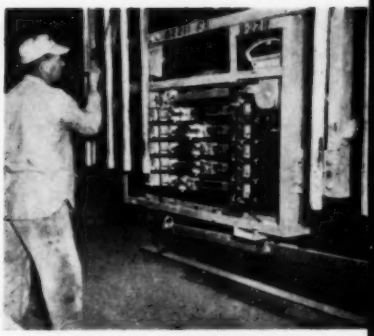
Joseph Chalupa Jr. is president

(*Continued on page* 208)

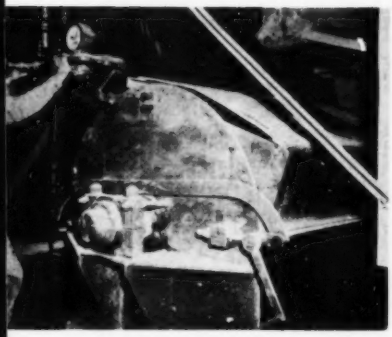
• Block production is now handled on just one high-production machine, but space and facilities are available for the future installation of two more similar machines.



• A view of the gates and the belt conveyor below the 4-compartment underground hopper. Piping on the side of the hopper is for steam used in cold weather operations.



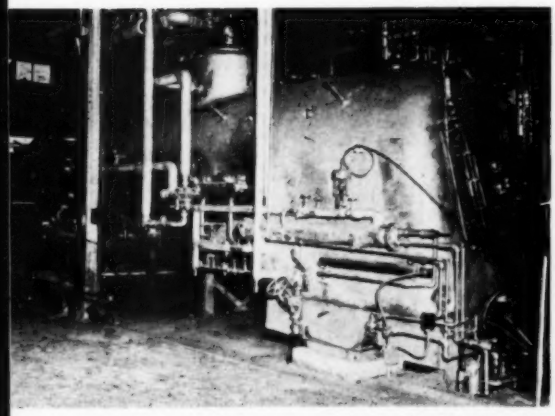
• The weigh-batcher in the block plant. This unit is mounted on a larry so that additional mixers can be served when they are installed.



• The 50-cu. ft. batch mixer is mounted on a balcony above the block machine, thus obviating the need for a skip hoist. The quantity of mixing water is checked by means of the meter at the left.

• The curing room doors operate vertically, and are counterbalanced by means of heavy-duty torsion springs.

• Steel racks which hold 108 8-in. equivalent masonry units are loaded into the kilns with a fork lift truck. Each room receives daylight through an 8-sq. ft. panel of glass block in the end wall.



• This 200-hp. oil-fired locomotive boiler provides steam for curing, as well as for heating bins and buildings throughout the plant. It is housed in a separate 30- by 40-ft. structure.

• Novel outdoor wash rack used for cleaning the truck mixers at the end of each day. Steam and water are piped underground to the raised platforms which separate the stalls.

Six-Foot Lengths of Pipe Made On Packer-Roller-Head Machine

another ON THE SPOT report

SINCE early last year a plant in Minneapolis, Minnesota, has been producing 6-ft. lengths of concrete pipe, primarily in diameters ranging from 12 in. to 36 in., with a packer-roller-head machine. The operator is the North Star Concrete Company of Mankato, and much of the equipment in the plant, includ-

By WILLIAM M. AVERY

ing the Model "TT" McCraken machine on which the long units are actually produced, was furnished by the Concrete Pipe Machinery Company. As a matter of historical interest, the Minneapolis plant is believed to have been the first in the industry to be equipped for making the longer lengths of pipe by the packer head process, and the success of the installation indicates that important economies can now be achieved in both the production and the end use of concrete pipe.

Although the machine is equally well adapted to the manufacture of either bell-and-spigot or tongue-and-groove pipe, the Minneapolis plant at present makes only the latter type, specializing in units ranging from 12 to 36 in. in diameter in the C-75 or C-76 classifications. Pipe measuring 15 in. in diameter and 6 ft. in length are produced at the rate of about 100 ft. per hour, but total output in certain diameters has been limited by mold and pallet shortages, and it is believed that under more favorable conditions the machine will readily perform at its rated capacity of 1,000 ft. in an 8-hr. day.

• A general view of the North Star Concrete Company's pipe plant at Minneapolis, Minn. The machine room is in the foreground, and the Quonset building at the right is used for curing.

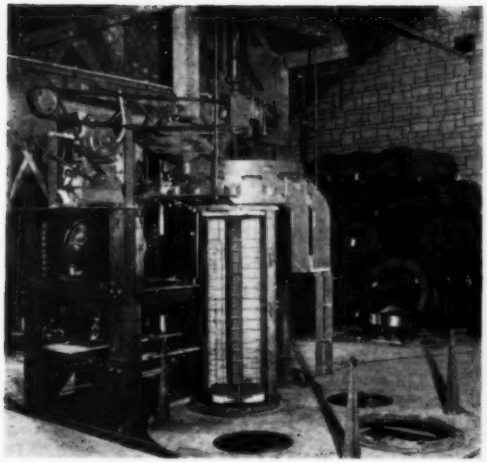
The North Star plant is located on an excellent 4-acre industrial site in northeast Minneapolis. The area under roof is about 12,000 sq. ft., and there is in addition an extensive paved area for casting operations in the "L" formed by the main machine room and the 40- by 100-ft. Quonset structure which is used for curing.

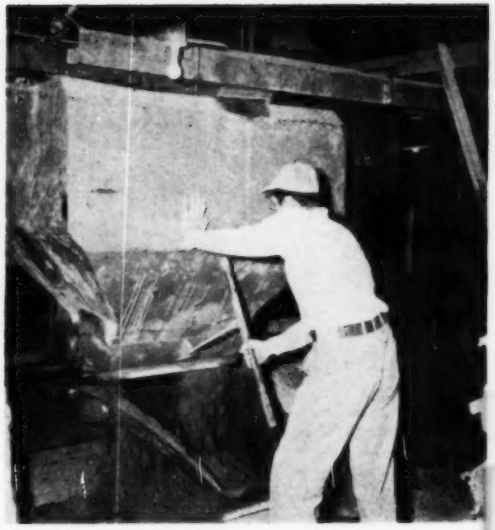
Sand and gravel, supplied by a local concern, are dumped into a ground-level hopper located outside the building. A reciprocating feeder delivers the materials to a belt bucket elevator, which in turn discharges into a two-compartment bin with a total capacity of about 50 cu. yd. Aggregates are withdrawn from the bin compartments through manually-operated gates into a 42-cu. ft. weigh batcher which is suspended from an overhead monorail. When the correct amounts of material have been weighed out, the batcher is shoved to a position over the 42-cu. ft. mixer and discharged. Cement is added at the mixer from 94-lb. paper bags.

The mixer dumps into a skip bucket which is hoisted vertically and discharged into a steel hopper mounted over a belt conveyor. This conveyor, which is an integral part of the pipe machine installation, is reversible so that it may be used to feed material to either of two production units. It is also equipped with a four-speed transmission so that the rate of feed may be readily controlled by the pipe-machine operator.

Except for its height and some minor details of construction, the McCracken machine is similar to earlier "T" models which have been widely used in the production of 4-ft. lengths of concrete pipe. It has a 60-hp., drive motor, and the turn table will accommodate two lengths of pipe simultaneously. It also makes 4-ft. lengths of corrugated bell-and-spigot pipe in the

• Some of the 68,000 close-face cribbing units which North Star is producing for bluff protection work on the Mississippi River at Minneapolis.





• Above: A closeup of the packer-roller-head machine which makes 6-ft. lengths of pipe.
• Right: The 42-cu. ft. weigh batcher discharging into the mixer. This unit is suspended from a monorail in order to transfer materials laterally from the bins to the mixer.

"bell up" position, thus eliminating the need for pallets when such units are being produced, and, of course, it is fully adapted to the manufacture of 4-ft. lengths of smooth-wall tongue-and-groove pipe, as well as of the 6-ft. lengths for which it was designed.

After a pipe has been formed, a conventional fork lift truck engages pins located on opposite sides of the mold (and at a point above mid-height) and removes it to the curing room. At the end of the day the room is closed up and low-pressure steam from a 60-hp. oil-fired automatic boiler is introduced through hoses. After steaming over night, the units are removed to the storage yard, where the curing process is completed.

Until the McCracken machine was installed, all pipe production at North Star's Minneapolis plant was handled by casting, and this method is still employed for units of 42- to 84-in. diameter. Batching and mixing are done in an annex to the main machine room. The concrete is dumped from the mixer into a steel bucket, which is picked up and carried to the casting area by means of a crane arm attachment mounted on one of the lift trucks. During severe winter weather cast pipe are occasionally made in the curing room to protect the concrete from freezing, but most of the work is done on a paved slab outside the building.

In addition to the pipe machine itself, Concrete Pipe Machinery Co. supplied the 42-cu. ft. weigh batcher, the skip hoist and the four-speed belt conveyor. The 42-cu. ft. batch mixer is a Stearns unit, and the two lift trucks used for handling molds, unloading the kiln, and for casting and stripping operations are Erickson and Towmotor machines—the former having a capacity of 5,000 lb. and the latter 6,000 lb. For yarding and loading work the company also operates a Hyster Karry Crane which has a capacity of about 6 tons.

Another important activity at the Minneapolis plant is the manufacture of precast cribbing. The first units of this type were produced about two years ago, and sales have been primarily to municipalities and to local industrial and utility concerns. Recently, however, North Star was awarded a contract to supply some 68,000 close-face units for a Corps of Engineers project which is believed to be one of the largest cribbing jobs in the country. Special facilities have been set up at the plant to handle production. The units are to be used for bluff protection on the Mississippi River at Minneapolis, and it is expected that the work will take almost a year, even with the special provisions made to speed up production.

The 6- by 10½-in. units are made in gang molds. They are reinforced with ⅜-in. diameter preformed steel rods, and compacting is done by

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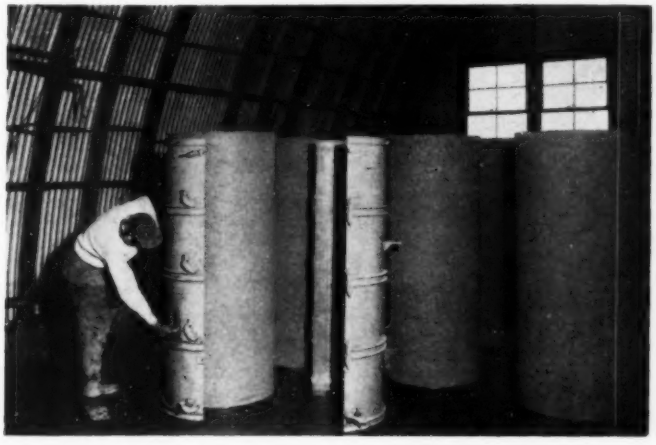

• Stripping an 18-in. diameter by 6-ft. long tongue-and-groove culvert pipe in the quonset building used for curing.

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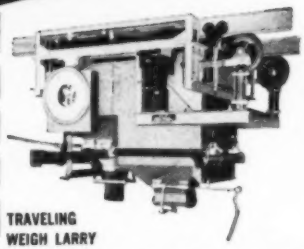
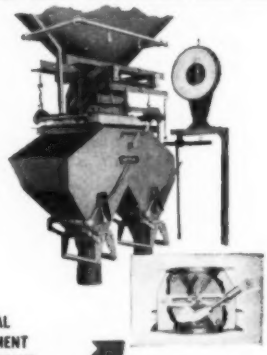
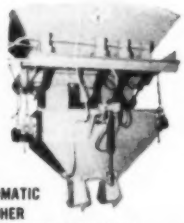
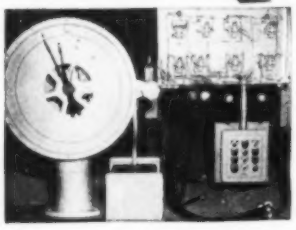
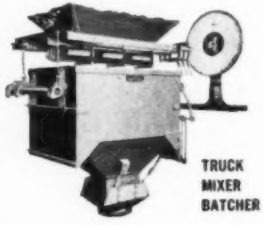

TRAVELING WEIGH LARRY


DUAL CEMENT BATCHER WITH TUBULAR CEMENT VALVE


AUTOMATIC BATCHER WITH CONTROLS




TRUCK MIXER BATCHER

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Standard Building Material

(*From page* 204)

of Standard Building Material Co., and Walter H. Milnar is president of Standard Ready Mixed Concrete Co., the name under which the firm's concrete operation is conducted. Mr. Milnar, a professional engineer, did all the design and layout work on the combined plants. Consultation service on the curing system was furnished by the Thermal Engineering Company, and the W. J. Hankee Company handled the boiler and heating installation.

Illinois Firm to Make Pipe For Big Allis-Chalmers Plant

The Ness Concrete Products Company of Danville, Ill., through its owner, W. A. Ness, has completed a lease for a portion of the exhibition building at the local fair grounds. It was stated that the space will be used for the manufacture of large concrete pipe for the new $5,000,000 Allis-Chalmers jet engine plant north of Terre Haute, Ind.

These pipes will be unusually large, 6 ft. long and 6 ft. in diameter. Each section will weigh approximately five tons.

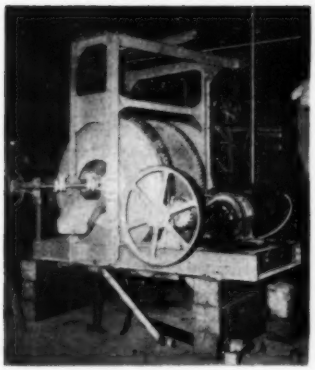
Alva Speer recently opened a new concrete block plant at Sidney, Neb. Both pumice and standard concrete block will be produced. In addition to Mr. Speer, who owns and manages the plant, Chris and Leonard Handley, operators of the Chappell (Neb.) Hollostone Company, are also associated with the venture.

Colorado Pre-Mix Concrete Company of Golden, Colo., was recently awarded a contract for 50,000 cu. yd. of concrete for the Rocky Flats atom plant. The figure involved was said to be about $500,000.

Don Griffin has been named sales-service representative for Wamix, Inc., manufacturers of ready-mix concrete at Dallas, Tex. He was formerly with *The Texas Contractor*, a Dallas construction magazine.

Harry W. Cramer, a partner in the Carlsen Concrete Supply Company of Indianapolis, Ind., died at his home recently.

Delmar P. McArtor has been promoted to assistant secretary of Universal Concrete Pipe Company of Columbus, O., according to an announcement by H. X. Eschenbrenner, president. Mr. McArtor, who joined Universal in 1947 after 20 years' experience with another Columbus firm, will continue to hold the position of credit manager.



• Left: This mixer has been set up in the pipe machine room to produce concrete for some 68,000 Massey cribbing units which North Star will make for bluff protection on the Mississippi River.

• Right: Yarding and loading operations are handled with this rubber-tired 3-wheel crane, which has a capacity of about 6 tons. Beyond the crane at the right is the paved area used for making cast pipe and cribbing units.

6-Foot Lengths

(*From page* 207)

means of Mall internal vibrators. The specifications call for 5,000-p.s.i. concrete throughout. Materials are batched and elevated with the same equipment used in the production of concrete pipe. However, the conveyor which feeds the pipe machine is reversed so that the dry-batched materials are discharged into a Koehring 21-S batch mixer, thus making it possible for the two operations to be carried on with minimum interference.

At Mankato, Minn., where the company's general offices are located, North Star produces sand and gravel and ready-mixed concrete, in addition to concrete pipe and drain tile. A third plant located at Elmore, Minn., about 55 miles south of Mankato, produces drain tile and concrete masonry units. At Mankato the company operates a fleet of about 25 trucks, but deliveries from the Minneapolis plant are handled by contract haulers.

Officials of the company are W. O. Radichel, president; Willard S. Brey, sales manager; Paul W. Radichel, in charge of sand-and-gravel and ready-mixed-concrete operations, and William D. Radichel, production manager. Steve Haugen is plant superintendent at Minneapolis, where the total crew employed in pipe production is around 15 men. The output of the Minneapolis plant is marketed primarily in the Twin Cities and environs.

N.R.M.C.A. Meeting

(*From page* 202)

It was announced that there were already applications from manufacturers for 171 booth spaces, with only 137 available, and more were expected. It was not known whether or not additional space could be obtained, but efforts are being made to get it, so that all exhibitors can be accommodated with all the space desired. Ralph C. Johnson (Simplicity Engineering Co., Durand, Mich.), chairman of the Manufacturers' Division, said members are all in favor of a larger show and hoped that the 1954 convention could be held somewhere with more exhibit space. Indications are, he said, that either this must be done or the old mezzanine-type show will have to be revived. This would be a backward step. The assurance of more space, he said, would be a great help in getting more associate members.

It was suggested that perhaps the 1954 convention could be held in Cleveland in consecutive weeks with the National Concrete Masonry Association because some manufacturers exhibit at both shows. Cleveland has enough good hotels and adequate exhibit space in its Public

(*Continued on page* 212)

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Installation of Direct-Firing Setup Streamlines Block Production

FASTER, economical and improved curing of cinder blocks is reported at the plant of the Buehner Cinder Block Company, Salt Lake City, Utah, since the installation a few months ago of modern steam-and-heat-generating equipment.

The concern, headed by Otto Buehner, is one of the West's leading producers and marketers of cinder concrete-masonry units. Production equipment consists of two Besser Supervibrapac machines, output on a two-shift, 16-hr. day running in the neighborhood of 19,000 units—8- by 8- by 16-in., or equivalent. The output is cured in nine rooms, eight of which have 2,000-block capacity and the ninth 3,000.

Formerly a conventional boiler furnished the steam and heat to the full complement of kilns; but to achieve anything like satisfactory results a 16-hr. curing period was necessary. Curing capacity thus bottle-necked productive capacity, and at a time when Salt Lake City construction was zooming along in high gear.

Faced with a solution to the problem, Mr. Buehner called in R. D. Emmons, Syracuse, N.Y., combustion engineer, who designed and installed an Emmons Vapo-Therm direct-firing system of sufficient capacity to serve five of the nine kilns.

By using the Vapo-Therm system, only 8 hrs. are now required for complete curing in the five kilns, resulting in twice the output they formerly handled. The remaining four kilns are still served by the old boiler on a 16-hr. schedule. In general, the management reports that kiln output using the new curing method has resulted in denser, more thoroughly cured units. Color too, is more uniform and breakage due to handling has been lessened.

The Vapo-Therm unit consists of a 1- by 10-ft. horizontal fire tube, surrounded by 6 in. of water and located in the lower part of a 4-ft. stainless-steel cylinder with a steam-generating area immediately above. Firing is done with oil. In operation, the burner is lighted electrically and controlled initially by a photo-electric cell. A fan circulates air through the combustion chamber, and the combination of heated air and gases passes to the 2- by 10-ft. upper steam-generating chamber, the flow being reversed by a baffle in the upper chamber Six spray nozzles are directed against the gas flow, and within 3 minutes steam is being directed into the kilns.

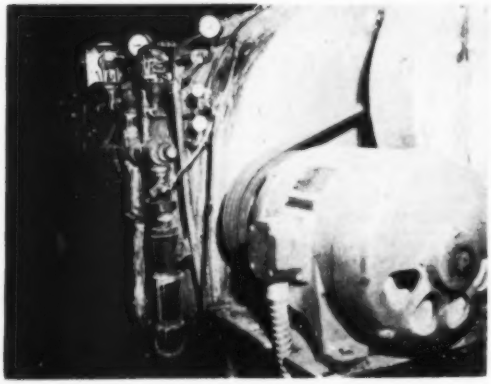
According to John Riches, who operates the new Vapo-Therm unit at the Buehner plant, as soon as a kiln is full and the door is closed, the generator starts. It is allowed to run for about 15 minutes to raise green-block temperatures 20 deg. F. It then shuts off for 1½ hours while the blocks absorb moisture before hydration sets in. The unit then starts up again, raising the temperature within the kiln to about 170 deg. F., which requires about 30 minutes, before it shuts down again. After 1½ hours the final steam-curing run begins and block temperature is raised to 180 deg. F. and kept at that or a somewhat higher temperature for approximately 1½ hours, after which the unit shuts off to end the curing. The units remain in the kiln for an additional 2½ hours or so before the doors are opened and the cured blocks are removed. Elapsed time is about 8 hours. The Vapo-Therm unit, however, operates less than 2½ hours during the cycle.

It is of interest that the steam is under practically no pressure—3 ounces is normal. In fact, the Vapo-Therm unit will shut off automatically should pressure reach 10 ounces. The steam is thus always a desirable, fluffy variety, free from carbon residues. A stack damper opens automatically for about 60 seconds each time the generating unit begins to function, to allow start-up smoke to exhaust into the atmosphere.

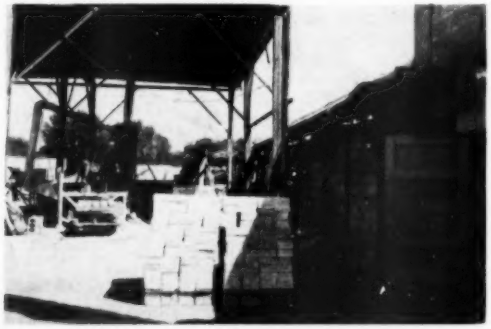
Ducts 12 in. in diameter carry the hot steam selectively to each kiln. Originally, these were of aluminum at the Buehner plant, but they were being replaced with insulated steel tubing for better efficiency when the installation was observed in August, 1951.

According to Victor Fabain, in charge of installing equipment at Universal Pipe Company's plant at Big Spring, Tex., production of pipe will soon begin, although some machinery is still to be put in. Among major items to be installed is a second craneway, which will extend northward from the shotcoat unit for 805 ft. This operation will produce pipe for the Colorado River Municipal Water District.

Officials of the Universal Concrete Pipe Company, Columbus, O., have announced the appointment of Leroy Smith as sales representative at the firm's Norristown, Pa., plant. Mr. Smith, who has had a wide experience in the field of concrete, will handle Universal's full line of precast concrete products.



• The direct-firing steam unit at the Buehner plant, showing some of the gauges and controls. The motor at the right drives the draft fan.

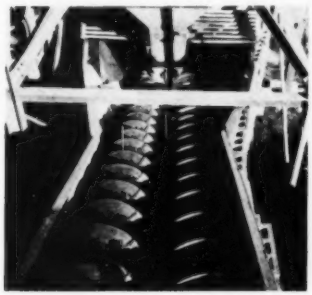


• This view along one side of the bank of nine kilns shows the new insulated steel piping being installed. The direct-firing steam generator is in the room to the right of the door standing open.

Cinders Given Lime Bath In Washer to Eliminate Staining and Rusting

Cinder Concrete Products, Incorporated, of Kansas City, Mo., has provided a cure for the difficulties experienced with rusting, weathering, or staining in exterior concrete masonry walls. Where walls were given a waterproofing or other masonry treatment, the staining was not apparent, but such treatment was not always economically practical.

It was found that the major portion of the cinders available for aggregate in the area contained compounds which later reacted to moisture and caused staining in erected structures. Following a comprehensive investigation of the

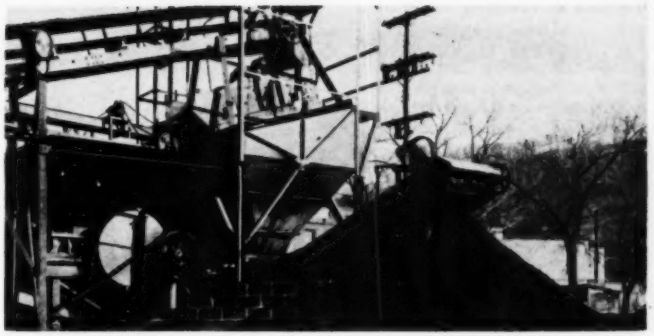


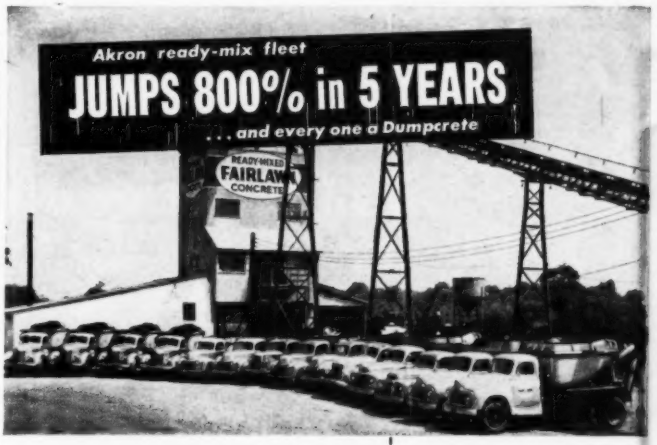
problem, it was decided to subject the cinders to a lime-water bath—2 lb. lime to 5 gal. water.

After trying the spray method, it was decided that complete immersion and soaking were necessary to insure absorbtion of the lime. For this purpose an Eagle double-screw, long-weir washer-classifier-dehydrator was installed. (See accompanying illustrations.)

Stockpiled cinders are bulldozed into a below-grade hopper for conveying to a vibrating screen. Oversize is chuted to a roll crusher, and crushed material is returned to the screen. Screened material is fed to the Eagle screw unit. The milk-of-lime solution is introduced through inlets in the bottom of the tub of the screw unit. The rising current of the lime water, plus the tumbling, abrading action of the screw, insures penetration of the lime into every particle. Overflow is re-circulated, with some loss. Results have been highly satisfactory, and the staining has been eliminated. Cinder Concrete Products is believed to be the first plant to apply this lime-bath process to cinders; the method is being observed by other cinder aggregate producers.

According to the *Wall Street Journal*, the National Production Authority has tightened its controls on the distribution of fabricated concrete reinforcing bars. A fabricator now must obtain a CMP (Controlled Materials Plan) allotment for the bars from his customer. The new ruling was announced by Manly Fleischmann, NPA administrator.





Fairlawn Supply and Coal Co. of Akron went into ready-mix in 1946 with a 1 yd. used paver and 2 Dumpcretes. Now they need a 4½ yd. mixer and 17 Dumpcretes to keep up with demand. Their success is due to three factors: (1) One man mixing control means they deliver *top quality concrete;* (2) Their customers get greater workability and plasticity from *air-entrained concrete;* (3) Dumpcretes charge fast, dump fast (4 yds. in 60 seconds, if wanted) and travel fast—the lightweight trucks are speedy and easy to handle in traffic—that helps Fairlawn *deliver on schedule.*

You too can make more with less investment. Dumpcretes cost only ⅓ as much as truck mixers, and they mount on a lighter weight and lower cost truck. There's practically no maintenance, and figures show you'll cut delivery costs about a dollar a yard.

Mail the coupon today for the detailed story of Fairlawn's success. It's an eye-opener.

Please send folder "How To Operate A Ready-Mix Business Without Truck Mixers."

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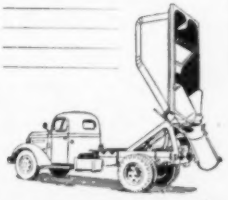

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EARLY DELIVERY ON CERTAIN MODELS — ORDER NOW!

N.R.M.C.A. Meeting

(*From page* 209)

Auditorium. Kansas City, Mo., was also mentioned as a possible location as it also has good hotels and a new convention hall which is conveniently located and adequate in every way.

No definite decision was made but the two boards voted in favor of an outside exhibit in 1954, to be held in Cleveland, Kansas City or somewhere else if adequate facilities are available. The 1953 convention is definitely going to be in San Francisco, but the headquarters hotel is yet to be decided on. The 1953 semi-annual meetings of the two boards are scheduled for September 30 and October 1 and 2, at the New Ocean House, Swampscott, Mass.

Following the board meetings many of the members who had not seen the new joint laboratory of the associations at the University of Maryland since important recent additions to its facilities had been completed went to Washington to visit the lab. Arrangements were made to take them on escorted tours with staff members to explain the functions of the various testing machines and the significance of the various projects under way.

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NEW MACHINERY and SUPPLIES

• Date Block Form

A date block or corner stone form that is designed to make a standard size unit is being marketed by the Edward Campbell Company, East Avenue and Walnut Road, Vineland, N.J.

The form is a steel frame with a re-

movable bottom which has the numbers mounted on it. The mix is hand-tamped into the mold, which is then inverted and stripped. Facing material may be placed in the mold first to give a special appearance, or other materials may be used for other effects.

• All-Purpose Lift Truck

An all-purpose lift truck that can operate in yards, streets, on construction jobs, and in other places requiring a large wheel tractor is being built by the Tracto Lift Company, 2011 Baltimore, Kansas City 8, Mo.

Built as a heavy-duty machine, the "Tracto Lift" is made in four sizes with lifting capacities of 3,000, 4,000, 5,000 and 6,000 lb. Fork sizes vary from 30 to 36 in. in length, with lifting heights

to 12½ ft. Power is supplied by an International 4-cyclinder 30.5 hp. engine.

While it is a conventional fork truck in many of its uses, attachments enable it to function as a crane or as a lifting dump bucket for handling ag-

gregate and similar materials. Several styles of forks—block, brick, and grippers —add to the versatility of the basic machine.

● Truck Mixer

A truck mixer that incorporates the Transo Direct Drive is being made by the Transmission and Gear Company, Dearborn, Mich.

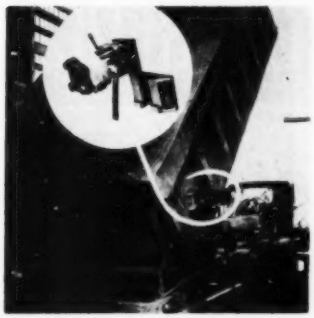
The "Transomixer" features a permanently leak-proof seal between the

hopper and the mixing drum. Seal wear is said to be eliminated, making maintenance and repair unnecessary. The drum is driven by a Transo Direct Drive, which is a planetary-type transmission direct-connected through a universal joint. It has two starting and two discharge speeds controlled by spring-loaded clutches running in oil. The built-in water pump has a separate spring loaded clutch. Use of this drive saves up to 1,600 lb. of dead weight through elimination of ring gears, chains, etc.

The mixer is built in 3½- and 4½-cu. yd. capacities and conforms to the Truck Mixer Manufacturers' Bureau specifications.

● Truck Vibrator

The Cleveland vibrator Type LSRR has been adapted for truck service to speed up unloading of bulk commodities such as cement, lime, and similar mate-



rials. The truck is fitted with a cast steel bracket into which the vibrator fits. This portable vibrator has been used on bins, hoppers, and other equipment where vibration is needed only for certain periods.

Cleveland vibrators are manufactured by the Cleveland Vibrator Company, 2806 Clinton Avenue, Cleveland, Ohio.

Jaeger truck mixers are lighter for a bigger payload

yet completely equipped

Because they're *engineered* for weight-saving, Jaeger HI-DUMPS have design features not found in models merely "stripped" for lightness. These are features essential for the production of superior quality concrete (and more concrete is sold by Jaeger Truck Mixers than by any other method). They also make it possible for Jaeger HI-DUMPS to haul more payloads per day.

For example, the diameter-to-length ratio of Jaeger's mixing drum has resulted in an improved drum shape of larger diameter. This new-type drum provides the fastest, most thorough mixing action for *any* slump concrete.

Engineered for time saving—10 seconds per yard to end-load dry materials thru new hopper. Charge wet material in one quick drop through quick-opening "toggle-lock" top door. Fast drum speed, plus low angle discharge cone and continuous blades, discharges 4" slump concrete @ 20-25 seconds per yard, 1" slump in 60 seconds.

See your Jaeger distributor or send for Bulletin TM-1.

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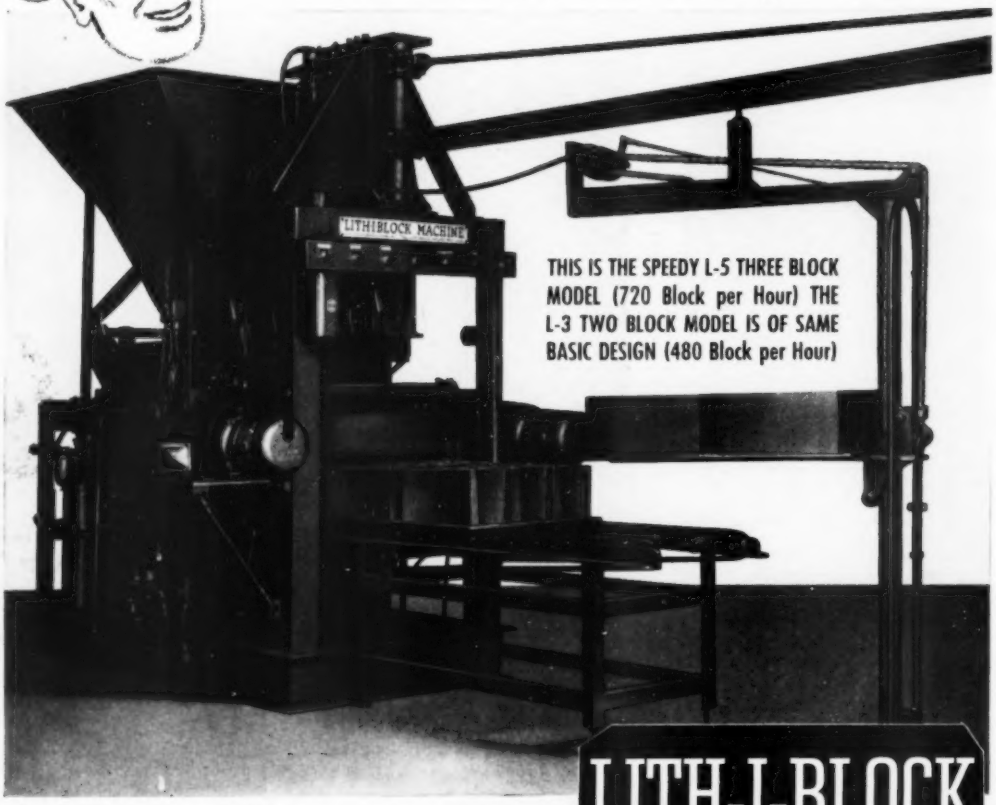

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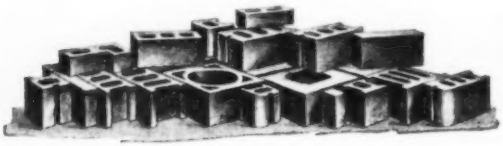
They find that service is no problem either. They know that parts are no farther away than the next plane departure. There is no costly break in the production cycle.

Yes, constant production. That's what it takes to make money in the block business and that's what Lith-I-Block delivers. As one of the biggest operators in the country said, "Our Lith-I-Block machines were only shut down four days last year . . . and that was due to a cement shortage, not to any fault of the machines."

Get proof of profitable Lith-I-Block performance for yourself. Write for the Lith-I-Block story and the names of nearby Lith-I-Block producers. Learn what Lith-I-Block quality and constant service can do for you.



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low friction—long life

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Here are exclusive features that will bring more time-saving, man-saving, money-saving advantages to your materials handling than was ever before possible!

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That's why today you get smooth, powerful gas truck operation day-in day-out. On steep ramps, rough roadways, in any weather—this YALE Gas Truck *delivers*, moves, lifts and stacks the goods. Let us show you exactly *how* YALE can accomplish all of this in your plant. Write for the facts today.

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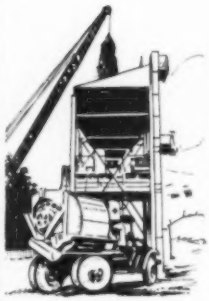
A fast, accurate balance in batching for high production is essential to a high profit operation.



And that's another vital advantage in BUTLER Weighing Batchers. Some batcher operators are, of course, better than others. The BUTLER engineer designs weighing batchers to eliminate —just as far as possible—the variations in human skill; in other words, to put the less talented operator on a par with the best. And that to you can mean a substantial extra profit.

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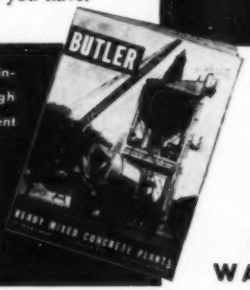
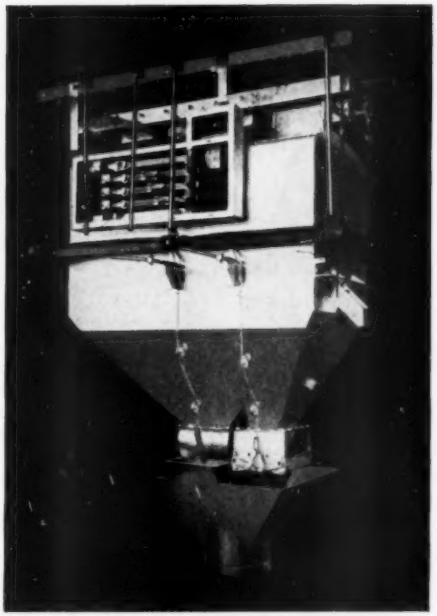
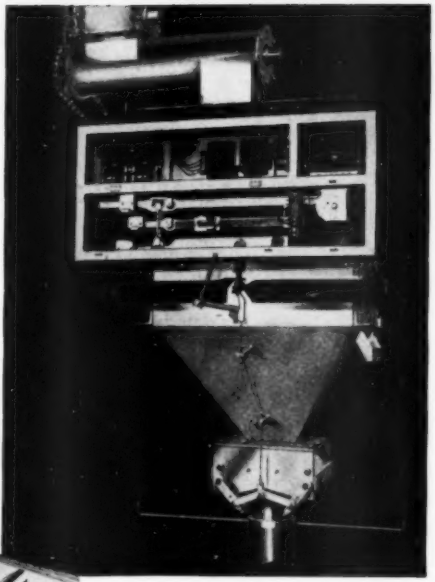
Ready Mixed Concrete, Central Mixing Plant operators. Write for Bulletin 185. Profusely illustrated. Shows many BUTLER Plants throughout the country and describes their operations.







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Makes your blades last longer . . . because Equalizer Spring automatically cushions blade pressure whether cutting HARD or SOFT materials. Guarantees faster cutting—longest blade life. Outstanding for blade economy.

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One man easily adjusts Cutting Head to desired height . . . whether cutting Stone, Concrete Block, Glazed Tile or Quarry Tile. Operator's hands merely guide — All weight supported by rear Connecting Bar.

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Merely pull the knob — and the Cutting Head is free for finger-tip setting at any desired angle. Release the Knob—and Head is locked in desired position. Another Clipper Patented Feature.

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Just turn the Save A Blade Dial to the hardness of the material you are cutting and the Clipper Pressure Equalizer Spring automatically sets the tension, to guarantee faster cutting and longer blade life — whether the material is HARD or SOFT. Whether using Diamond or Abrasive Blades . . . Cutting Wet or Dry with the Dustless Model HD. (Not on Model C Series.)

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Concrete Manufacturer Classified Section

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SPACE HEATERS
War Surplus Bargain

New — Ready To Use!

40,000 BTU capacity

—Burning gasoline, kerosene or diesel fuel.

—Electric blower—12 V. DC or 110 V. AC using small transformer which we furnish with each heater.

Portable, Quick, Clean Heat

Ideal for curing room, concrete plants, work under construction, emergency heat, or auxiliary heaters.

$95.00 each

Clapp, Riley and Hall Co.
14 No. Clinton St.,
Chicago 6, Illinois

FOR SALE

CONVEYOR belt—36" 6 ply 500' new 700' little used
CLARK forklift Utilitruck—6000#, good as new
HOWE SCALE, 30 ton 40' platform, never used
PALMER BEE roller conveyor, 4¼" rolls 6", 1¼" axles
IHC 5 ton trucks, 11.00x20, nearly new condition
FLATBED trailers, 15 ton, 11.00x20, 8' x 26'
BIN 300 yard, round 22' dia. x 34' high, ⅜" plate
RAIL 600' 25# unused, some switches
MAXON dumpcrete bodies, 4C, slightly used
BLOWER FAN 72" cap. 55,000 CFM, new, never used
BESSER yardhoist complete 3 at a time clamp
SYNTRON vibrators, V200 never used

BUILDERS COMPANY
Nakoma Road Madison 5, Wis.

Lima Type 802

LIFTING CRANE

SERIAL NO. 32617

With 18'11" crawlers, 36" treads, 125' boom and 25' gib, backhitch gantry, running board on operator's side, power (live) boom hoist, boom hoist sling, 6 cyl. 6¼x 6½ type "WAK" Waukesha gasoline engine with electric starter, foot accelerator, multiple line block, single hook with overhauling ball and cables; two-drum hoist in place of standard boom hoist; roller guard assembly; rudomatic tagline winder.

WILLIAM R. GOSS CO.
8316 S. Ellis Ave. Chicago 19, Ill.

FOR SALE

One chimney block attachment for Stearns Model A Power Clipper plus 650 — 8 x 8 Cast iron pallets and 300 — 8 x 12 cast iron pallets. Price $1,000.00 FOB our plant.

Watkins Concrete Block Company, Inc.
4215 R. Street Omaha, Nebraska

UNBREAKABLE PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE OR RENT
TRANSIT MIX TRUCKS

12—3 CU. YD. 4½ CU. YD. AGGITATORS YEAGER AND BLAW-KNOX MIXERS MOUNTED ON C-50 AUTOCARS CHASSIS. DOUBLE REDUCTION REARS.
18—5½ CU. YD. 7½ CU. YD. AGGITATORS HI-DUMP SMITH MIXERS MOUNTED ON C-90 AUTOCAR CHASSIS. DOUBLE REDUCTION REARS.
14—4½ CU. YD. 6½ CU. YD. AGGITATORS HI-DUMP JAEGER MIXERS MOUNTED ON C-70 AUTOCARS. DOUBLE REDUCTION REARS AND DODGE TANDEMS.
ALL THE ABOVE EQUIPMENT IN A-1 CONDITION—EQUIPPED WITH REVOLUTION COUNTERS AND AUTOMATIC WATER GAUGES. NO PIECE OF EQUIPMENT OLDER THAN 1947 MODEL.
WRITE
HIGHWAY PRODUCTS COMPANY
1102 EAST CARSON STREET
PITTSBURGH 3, PENNA.
ATTENTION: CHAS. PARISH
OR PHONE: EVERGLADE 1-7304

FOR SALE

1—Stearns Model 50 machine complete with 4"-6" and 12" liners, also half height and bull nose attachments.
1—Stearns 42' V-belt drive mixer.
2100—18x18x¾" plain steel pallets.
30—new racks 72 block capacity for 18x18 pallets.
48—used racks 66 block capacity for 18x18 pallets.
1—Stearns #9 Joltcrete with power carriage, height control, pneumatic offbearer and 4"-8"-12" mold boxes, large quantity pressed steel modular pallets equal to new in 4"-8"-12" sizes.
2—Chase Turntables.
1—Stearns 42' mixer, v-belt drive.
1—Stearns 42' skip, inclined.
1—Stearns Clipper Model A with 2,200-8" 50% a.s. Rect. core regular pallets, 500-8" 50% a.s. Rect. core single and double cor. pallets. **Extra pallets, 800-8" code Dirge regular 50% Rect. core & 1,000-8" code Disk single corner 50% Rect. core 1 yr. old.**
E. T. KECK, 1130 S. W. 74th Ave., Miami 44, Fla.

BATCHING BIN

Immediate delivery on NEW 4 Compartment Bin, 3 for aggregate, 1 for cement. Total capacity 425 tons. Complete with supports, clam shell valves on aggregate hoppers and rotary valve on cement hopper. With traveling Weigh Lorry 2½ yard capacity including Toledo 12,500 lb. Scale. All heavy plate construction. Can rearrange supports to suit your conditions.

MULTIPLEX MACHINERY CORP.
ELMORE, OHIO

FOR SALE

1—Lith-I-Block Machine 4", 8" & 12" attachments. 1950 model. 10 horse Quincy Air Compressor like new. Spare parts.

JOHN WHITMAN AND SONS
Midland, Michigan

FOR SALE OR LEASE—Erie Strayer Portable Cement Plant—like new, used on one job only for a total of about two hundred hours. This plant is a specific for large buildings, bridges, government projects, etc. Original cost $20,000.00, estimated new cost now $22,000.00. Will sell for $13,000.00 net, f.o.b. Aurora, Illinois, or will lease. Call collect, Aurora 2-7636, or write **Robert J. Phillips, 230 Galena Boulevard, Aurora, Illinois.**

PACKER-HEAD WINGS
Both McCracken Type and Martin Trowelers—PROVED to last as long or longer — yet cost considerably less. Write for prices.
TEXAS FOUNDRIES
LUFKIN, TEXAS

1—**APPLEY**—Yellow semi-automatic two per cycle block machine complete with 10 HP air compressor, mixer skip and pallets to make 7⅝ x 7⅝ x 15⅝ blocks.
1—Appley Little Giant block machine to make two 4" blocks per cycle. Pallets included.
Price complete $7,500.00 f.o.b. Miami, Florida.

Llewellyn Machinery Corporation
P. O. Box 2589 Miami, Florida

100,000
PRESSED STEEL PALLETS
In Stock

Send tracing or pallet for quotation.
27" Joltcrete 4-8-12 Mold Boxes
$2500.00 — good condition
GENERAL CONCRETE EQUIPMENT CO.
307 Hunter St., Dept. PQ
Gloucester, N. J.

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE
"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

FOR SALE—EXCESS EQUIPMENT

2 yd. Jaeger Hi-Discharge End Loading Hopper. Serial No. J-6328. Operating Condition. Needs new Seal $450.00
3.6 yd. Ransome Horizontal Mixer. Operating condition $500.00

W. S. BLOCK CO.
DAVENPORT, IOWA

BESSER SUPER VIBRAPAC PLANT
FOR SALE

Progressive City of almost one million population. Large Backlog booked at high prices. Wonderful earning record. Walkout proposition. $100,000 will handle. Owners have other interests.

BOX NO. 452, c/o The Concrete Manufacturer
431 South Dearborn Street Chicago 5, Illinois

ADVERTISE YOUR "WANTS" AND SURPLUS EQUIPMENT

CONCRETE MANUFACTURER
538 S. Clark St., Chicago 5, Ill.

USED TRANSIT MIXERS

At Bargain Prices

All Units Thoroughly Checked and in Good Operating Condition

- 3 Cook Bros. 5TM—5 yard paddle type Mixer, (similar to Hi-Lo) mounted on '48 Ford Dual Center Chain Drive, 145 HP Truck—Air Brakes ..... $4,995.00 Ea.
- 5 Jaeger 4½ yard Streamliners $2,150.00 Ea.
- 1 Ransom 4½ yard Hi-Discharge Mixer ..... $1,895.00 Ea.
- 3 Jaeger 4½ yard Hi-Discharge Mixers ..... $ 795.00 Ea.
- 3 Challenge 5 yard Mixers ..... $3,250.00 Ea.
- 2 Jaeger 3 yard Streamliners mounted on 1946 Ford Center Chain Drive, 10 wheel trucks ..... $2,995.00 Ea.
- 2 Challenge 3 yard Mixers mounted on 1950 C.O.E. Trucks ..... $3,650.00 Ea.
- Several 2 and 2½ yard truck mounted engine and power take off drive, including '45 to '47 chassis ..... $850.00 Ea. and up

Convenient Terms to Fit YOUR Budget

COOK BROS. EQUIPMENT COMPANY

1815 No. Broadway, CApitol 2-9111, Los Angeles 31, California

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Owner Must Sell Due to Illness

Miles Tamper, Block Machine, Strike-Off Elevator & Feeder w/8"x8"x16" Rack. Plain & Panel attachments w/1 HP & 2 HP Motors, also Halves & Corners. One 12' Batch Mixer w/5 HP Motor. Lift Truck, 1000 pallets. 20 Steel Racks. 50 block capacity. Cost new $2500.00. Will take $2000.00.
1 Rubber tired roller bearing Lewis-Shepard Lift truck, bed 72" x 25". 11" high when lowered. $150.
1 Rubber tired roller bearing Barret Cravens Lift truck, bed 72" x 24" 11" high when lowered. $150.
All prices F.O.B. Shipping Point.

R. S. Geyer, 875 Massachusetts, Indianapolis 4, Ind.

FOR SALE

Patent—On Machine for the Manufacture of Concrete Burial Vaults.
Estimated Production about 300-500 Vaults Per Day.

SOMERS CONCRETE PRODUCTS CORP.
Amawalk, Westchester County
New York

FOR SALE

1—Model "A" Stearns Power Clipper Stripper Block Machine Makes 7¾ x 7⅝ x 15¾—4 x 8 x 12 also 8 x 8 x 12 blocks. Complete with 18' Mixer, Motors, Pallets, Chase hand lift racks and hand lift truck.

SALISBURY BRICK COMPANY, INC.
Salisbury, Maryland

FOR SALE

45—3 deck steel racks, with wood stickers. Each $10.00
1—Lewis-Shepard lift truck, 3500# capacity $150.00
1—Lewis-Shepard lift truck, 2500# capacity. $125.00

W. N. Hall & Son, Allegany, New York

FOR SALE

F. C. George 2-unit direct action hydraulic block machine; attachments for 4", 8", 12", sash and various heights; 2000- 8", 1000- 4", 500- 12" pallets; spare parts; perfect operating condition; inspection invited while this equipment is still being worked. Asking price: $2000.

GIBRALTAR BLOCK CO.
Caffrey Ave. Bethpage, N. Y.

WANTED TO PURCHASE
BESSER SUPER VIBRAPAC

Mold Boxes — Mixer — Skip Hoist
Pallets — Lift Trucks — Cinder Crushers

CORRIVEAU-ROUTHIER CEMENT BLOCK CO., INC.
Clay and Union Sts. Manchester, N. H.

WANTED

J & C 6 Pocket Brick Press

Box No. 454, c/o Concrete Manufacturer
431 South Dearborn St. Chicago 5, Illinois

FOR SALE

One—Kirk & Blum Concrete Joist Vibrating Table Complete with 8"-10"-12" Joist Molds.

UNION CONCRETE PIPE COMPANY
Ceredo, West Virginia

FOR SALE

1—Excellent #7 Joltcrete block machine with 4", 8" and 12" attachments and all pallets for full production. See it operating. Very reasonably priced. For details contact

PHIL ORAM, 4119 W. 74th Terr., Mission, Kansas, Ph. Gilmore 9780.

CEMENT COLORS

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 34 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS-SEGAL COLOR CO.
71 Delevan St. Brooklyn 31, N. Y.

WANTED TO BUY FOR CASH

A used two at a time plain pallet block machine with Racke pallets and mixer. Will consider separate. Also a Hydraulic Pipe Machine, used.

GILBERT CONCRETE PRODUCTS CO.
P. O. Box 1340 Hendersonville, N. C.

WE WANT TO BUY a used 4-in. mold box, stripping pins and 6,000 steel pallets and a used 12-in. mold box, stripping pins and 2200 steel pallets for a Sterns-Joltcrete block machine No. 9, serial no. J-96.

Universal Concrete Pipe Company
297 S. High Street, Columbus, Ohio

WANTED

Under car unloader and Belt Conveyor for stock piling sand and rock and loading trucks. State make, condition and price, giving picture or cut if possible.

CONCRETE PRODUCTS
P. O. Box 1792 Fort Myers, Florida

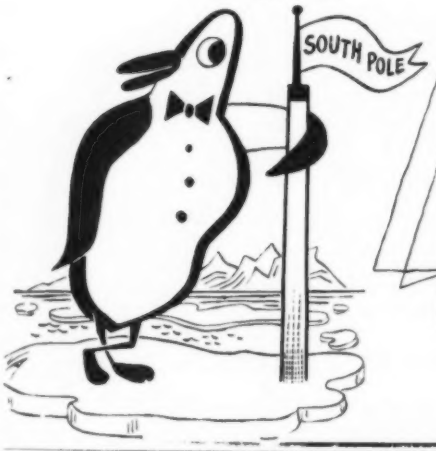
WANTED TO PURCHASE
BESSER SUPER
VIBRAPAC

Box No. 351, c/o Concrete Manufacturer
431 S. Dearborn Street, Chicago 5, Illinois

how white is white?

"... the penetrating whiteness of the penguin's dress shirt mirrors the Antarctic snow..."

H. A. Milton



Use Trinity White—the *whitest* white cement. Trinity White is a true portland cement. It meets all Federal and ASTM specifications. Use Trinity White for architectural concrete units, terrazzo, stucco, paint, ornamental work, tile setting, etc. Ask for it by its full name *Trinity* White.
Trinity Division, General Portland Cement Co., 111 W. Monroe St., Chicago, Republic Bank Bldg., Dallas, 816 W. 5th St., Los Angeles.

Trinity White

PORTLAND CEMENT

MULTICO BLOCKMASTERS

they've got everything!

MULTICO BLOCKMASTERS *have got* everything the modern operator wants. Multiplex engineers build FULLY AUTOMATIC machines with a compression action unavailable elsewhere; a combination of VIBRATION, TAMPING AND PRESSURE for perfect blocks. They chose HYDRAULIC POWER for smoothness of action and originated the idea of making a SEPARATE POWER PAK CONTROL unit for easy maintenance and simplicity of design. The Blockmasters have INDIVIDUAL MOLD BOXES for instant block-style change, coupled with PLAIN PALLETS for making ANY SIZE and ANY SHAPE of block out of ANY AGGREGATE. Both of these TWO MACHINES, the 2-block cycle MULTICO No. 2, and the 3-block cycle MULTICO No. 3, have STANDARD REPLACEMENT PARTS.

This is what John P. Kocak, Manager of the Lorain Crystal Ice Company, Lorain, Ohio, wrote us—

"It (MULTICO No. 2) has given us very good results, the block being the best we ever produced; they're dense, sharp, and test beyond requirements. Production is at a rate of between 450 to 480 block per hour."

Multiplex engineers want to help you plan your plant expansion, and can offer you the automatic block machines, mixers, skip hoists and compartment aggregate bins that are required for successful plant operation.

MULTIPLEX Machinery Corp • Elmore, Ohio

Concrete Pipe Machinery Co.

MODEL "T" BELL-UP "McCRACKEN" MACHINE

With 40 cu. ft. mixer and skip-loader to serve machine

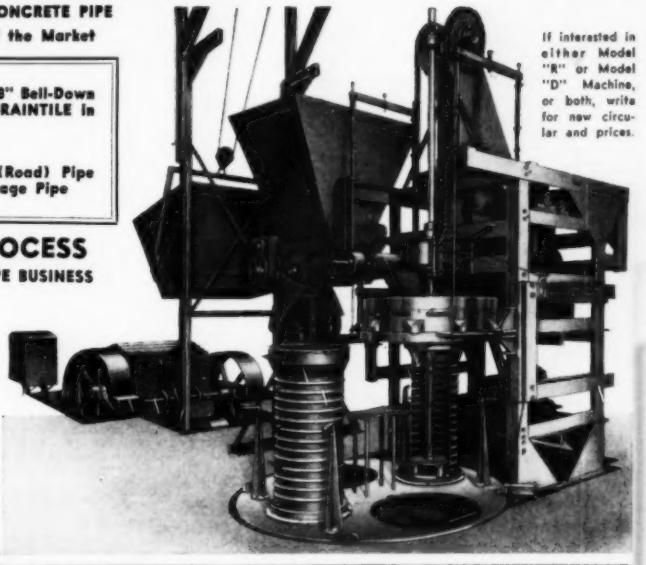
FOR MAKING PLAIN AND REINFORCED CONCRETE PIPE

Range of Sizes — 4" to 36" — 80% of the Market

ALSO MAKE MODEL "R" — Sizes 4" to 18" Bell-Down Machine. MODEL "D" Makes Butt-End DRAINTILE in 1 or 2 ft. lengths. Sizes 4" to 16.".

USES FOR CONCRETE PIPE

Storm & Sanitary Sewers • Culvert (Road) Pipe
Irrigation (T&G) Pipe • Farm Drainage Pipe



If interested in either Model "R" or Model "D" Machine, or both, write for new circular and prices.

PACKER-ROLLER-HEAD PROCESS

LEADS THE WAY TO MORE PROFITABLE PIPE BUSINESS

Eight-Hour Shifts Produce:

SEWER C-14
Plain B & S Pipe
2400 feet — sizes 4" to 10"
1750 feet — sizes 12" to 18"
1200 feet — sizes 21" to 24"

SEWER C-75 & CULVERT C-76
Reinforced T & G Pipe
1600 feet — sizes 12" to 18"
1100 feet — sizes 21" to 24"
900 feet — sizes 30" to 36"

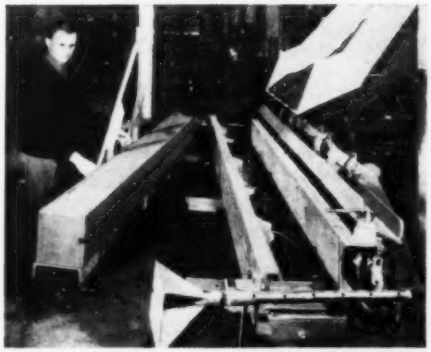
Concrete Pipe Machinery Co.
Cable Address: Macpipe

EXPORT OFFICE
P.O. Box 252
Pleasantville, N. Y.

MAIN OFFICE
Sioux City (17)
Iowa, U.S.A.

SILLS *too...*

Are Increasing the Profits from LINTELATORS



Yes, in addition to lintels in various lengths and sizes, concrete sills are being made rapidly and profitably on KENT Lintelators. And, in some instances, fence posts are also being produced.

But isn't this a logical development. Since builders "go for" concrete lintels with their block-like texture, their simple and cost saving installation, why shouldn't they buy matching concrete sills?

Experience has proved that they do buy them, opening still another market for sales and profits.

Do you know the Lintelator story? If you don't, you should! And, isn't this the time to investigate and consider any other changes in equipment you may have in mind? An interesting illustrated bulletin is available on request.

SUPER LINTELATORS
Make lintels 7⅝" HIGH by 3⅜" 5⅜" 7⅜" 9⅜" 11⅜" WIDE in these lengths.

S 6	2'8" up to 6'
S 7	2'8" up to 7'4"
S 8	2'8" up to 8'8"
S 9	2'8" up to 9'4"
S10	2'8" up to 10'8"

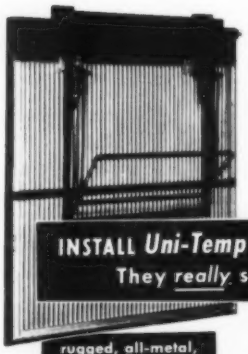
STANDARD LINTELATORS
Make lintels 7⅝" HIGH by 3⅜" 5⅜" 7⅜" WIDE in these lengths.

No. 6	2'8" up to 6'
No. 7	2'8" up to 7'4"
No. 8	2'8" up to 8'8"
No. 9	2'8" up to 9'4"
No. 10	2'8" up to 10'8"

The **KENT MACHINE CO.**
CUYAHOGA FALLS, OHIO
Manufacturers of
CONCRETE PRODUCTS MACHINERY SINCE 1925

Cure *better* block— at *lower* cost!

by stopping costly losses of heat and steam through kiln doors or covers that don't *really* seal and insulate. Your cost per block goes *down* when you stop pouring fuel $$$$$ into the open air. And you get *better block* too—because you get more uniform curing conditions throughout the kiln.



INSTALL *Uni-Temp* CURING ROOM DOORS
They *really* seal and insulate

rugged, all-metal, fully insulated!

Ask too about the *Universal* DOOR CARRIER
World-famous door handling equipment—since 1904

Write:
UNIVERSAL DOOR CARRIER, INC.
1117 Cornell Ave., Indianapolis 2, Ind.

TURN CONCRETE INTO GOLD

With the Famous

MARVEL JR.
CONCRETE DRAIN TILE MACHINE

Produce flat-end drain tile in various sizes and combinations at record low cost. Quick profits for you in steady paying business, demand far exceeds production. Machine ready for use when it arrives—will pay for itself and a profit in a few days. Write for Drain Tile Bulletin.

CONCRETE MACHINERY CO.
P. O. Box 2248 **Hickory, N. C.**

Concrete Machinery

Since 1904

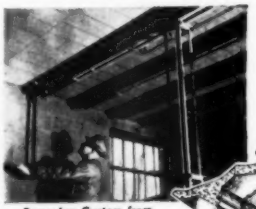
- ☐ Block Machines
- ☐ Brick Machines
- ☐ Concrete Mixers
- ☐ Roof Tile Machines
- ☐ Drain Tile Machines
- ☐ Ornamental Molds
- ☐ Stucco Spraying Outfits
- ☐ Strength Testing Machines

Check square for literature wanted

W. E. DUNN MFG. CO.
112 Ottawa Ave. *Holland, Mich.*

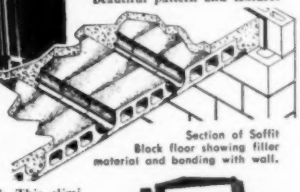
SELL MORE BLOCK ON EVERY JOB!

Furnish VIBRAPAC SOFFIT BLOCK for ALL FLOORS and ROOFS



Removing Centers from Finished Floor.

Permanent, Fireproof Floors and Roofs. Low initial cost and maintenance. Natural base for radiant heat installations. Provide surface of maximum acoustical and insulation value. Can be plastered, or if left exposed, makes a ceiling of beautiful pattern and texture.

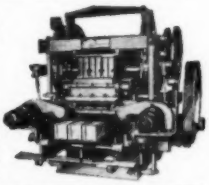


Section of Soffit Block floor showing filler material and bonding with wall.

Soffit Block are supported in place with temporary adjustable steel centers while reinforced concrete slab is placed and cured. This eliminates timber shoring and leaves space below clear during construction.

BESSER VIBRAPAC PRODUCES SOFFIT FLOOR AND ROOF UNITS

The same machine that produces high quality concrete masonry units in all styles and sizes, using Plain Pallets. Continuous, full capacity operation. Fully automatic. No machine operator required.

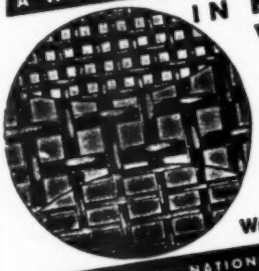


BESSER MANUFACTURING CO.
ALPENA, MICHIGAN, U. S. A.
Complete Equipment for Concrete Products Plants

A 5867-¼R2

Advertise Your "Wants" and Surplus Equipment

Industry has A WORLD OF CONFIDENCE IN NAT-ALOY WIRE CLOTH



COVERS EVERY REQUIREMENT

. . . for a dependable, long-wearing, non-crystalizing Screen Cloth. Has "Nat-Alloy" Lock Crimp Meshes. Preferred for screening accuracy, economy and serviceability. All Sizes — All Meshes — All Gauges.

Write for Catalog No. 55

NATIONAL WIRE CLOTH CO., INC.
St. Paul, Minn.

Need Help in Your Block Making Operations?

Many Satisfied Customers operating 60 machines.

Here's a 'Sure Cure' for VIBRAPAC PRODUCTION PROBLEMS

$60 per day EXTRA PROFIT

OSWALT SERVICE

Simplifies plant operation — no skilled technician required. That is why you can depend on an Oswalt Service Man for "first aid" in running your vibrapac machine, either for speeding up production or making adjustments to overcome operating difficulties.

One of our subscribers found that in rebuilding his machine during the winter months he could not make it produce blocks properly after it was re-assembled. Twenty minutes after the Oswalt Service Man arrived on the job, the machine was running smoothly and producing blocks at peak capacity. Many similar cases on record show that Oswalt Service is indispensable to vibrapac owners.

WRITE OR PHONE for name of Oswalt - serviced plant nearest you.

Oswalt Service not only boosts output of your vibrapac machine 50% or more without sacrifice of block quality, but also provides insurance of continued operating efficiency. **Ask for Booklet.**

OSWALT ENGINEERING SERVICE CORP.

1335 Circle Ave., Forest Park, Ill.

Phones: EStebrook 8-3666 - FOrest 6-3898

PENN-DIXIE CEMENTS

PORTLAND PENN-DIXIE CEMENT

PENN-DIXIE CEMENT *Corporation*

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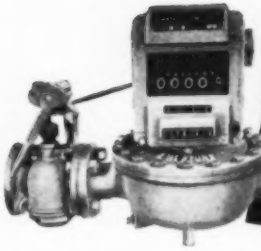


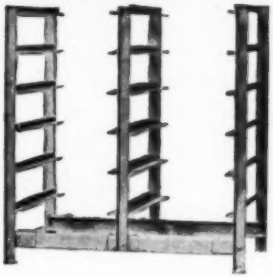
ACCURATE WATER CONTROL —*Automatically*

Accurate Auto-Stop meters are the quickest, most dependable way to control water in ready-mix batches. Just push buttons to set the quantity, open the valve, and the Auto-Stop does the rest. It automatically shuts off when the correct amount is delivered. Saves work, speeds loading. Large, easy-to-read numerals. Sturdy, weatherproof register has emergency stop, quick resetting, and totalizing features. Sizes for all ready-mix plants. Write for quick facts, or phone our nearest branch.

NEPTUNE METER CO. • 50 WEST 50th STREET • **NEW YORK 20**
Atlanta • Boston • Chicago • Dallas • Denver • No. Kansas City
Louisville • Los Angeles • Philadelphia • Portland • San Francisco

CHASE BLOCK RACKS, CARS, PALLETS

Corrosion-Resistant Hi-Strength Alloy Steel

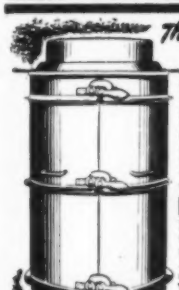


For Fork or Platform Lift Trucks

CHASE — THE LAST WORD IN
- ***DURABILITY***
- ***ECONOMY***
- ***EFFICIENCY***

Sturdy construction • any style or capacity • Shipped knocked down • Rigid Field connections • assembled Easily

CHASE Foundry & Mfg. Co.
COLUMBUS 7, OHIO



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The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

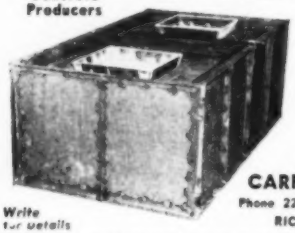
QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell and pipe at lowest cost. **WRITE TODAY.** Complete information, prices, and estimates sent on request. Also manufacturers QUINN CONCRETE PIPE MACHINES.

QUINN WIRE & IRON WORKS 1627 12TH ST. BOONE, IOWA

OK'd from Coast to Coast

by Concrete Producers **CARPENTER** Septic Tank Forms and Handling Equipment are popular everywhere because they insure large output of a first class product, on a high-economy basis. One man handles the Carpenter Delivery Rig.



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NOW MORE THAN 120 *LICENSED MANUFACTURERS* ***Producing***

Patented
homeward *Concrete* STEPS
A Small Investment That Pays Big Dividends

Homeward all metal forms are precision built to produce a product that requires no hand finishing.

The exclusive franchise for your territory may still be open.
For Complete Information Write
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MEETING LOAD LIMITATIONS WITH HIGH CAPACITY

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Large Producers of Ready Mixed Concrete in the Miami, Florida area Now use...

HI-LO TRUCK MIXERS

There Must be a Reason!

CONCRETE TRANSPORT MIXER CO.

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Serving the CONCRETE INDUSTRY 20 YEARS

Increase BLOCK Output with a Sturdy *Erickson*

The Platform Truck "Custom-Built" for your racks—from 60 to 108 or more 8x8x16 blocks.

"THE BACKBONE OF BLOCK PRODUCTION" is what users still call the Erickson Platform Truck. Its rugged dependability to handle loaded racks from block machine to kiln assures top speed production with no delays or shut downs. The Erickson platform picks up all racks from the ends and places them close together in the kiln—no wasted space. For faster operation Erickson now offers 4 speeds forward and 4 speeds reverse. We will build you a truck exactly suited to your racks and doorways. Also fork type trucks.

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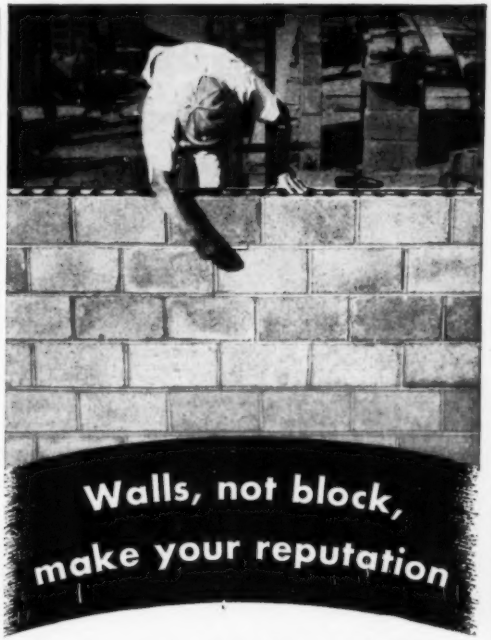
Erickson POWER LIFT TRUCKS, Inc.

1403 Marshall St. N. E. • Minneapolis 13, Minn.



You *make* concrete block, but is that what you *sell?* Is that what the ultimate customer buys when he purchases your product to build a house, a store, office, garage or factory?

No. He buys walls. He judges you and your product on the basis of how it performs as a wall—after the units have been laid. That's why your reputation depends on how well those walls serve, how well satisfied the customer is.

The first requirement for quality walls, of course, is quality block. That means complying with ASTM and Federal specifications for moisture content, strength and water absorption.

Yet quality block alone will not assure walls that give good performances. Quality construction is necessary too. For that reason farsighted concrete masonry manufacturers recommend only those contractors who can be depended on for quality concrete masonry construction.

In addition they make frequent inspections of construction on jobs where their units are being used. They know that quality walls are the best salesmen for additional jobs, the best insurance for continued success and future business.

PORTLAND CEMENT ASSOCIATION

33 W. Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

Save 8 man-hours every day

with truck-man !"

And that's not hay! That's what block plant operators across the country tell us they save with this economical, rugged truck. One man's time . . . every day . . . the whole year 'round . . . *that* adds up!

You save up to $300.00 and more during the first month you put Truck-Man to work in your block or brick yard . . . and you continue to save at that rate during years of faithful, dependable Truck-Man service.

Truck-Man is a light, speedy, highly maneuverable truck that works a shift on little more than a gallon of gas . . . requires minimum maintenance . . . has simple controls any worker quickly learns to operate. The special 62" platform handles even 72 block racks . . . those extra big loads that mean more profit per trip between block machine and curing room. Various platform heights, widths and lengths available to suit your operation.

There's an extra dividend for you, too, in the gentle treatment your blocks get. Truck-Man's easy hydraulic lift and drop, soft *start* and *stop*, and rubber-cushioned ride spot your racks gently . . . no costly checking of green blocks to eat up profits.

New 1951 catalog describes three low-cost Truck-Man models. You owe it to yourself to get the whole story on this money-maker. Coupon brings your copy, at no obligation. Mail it now. Sales and service in 95 centers across the nation!

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TRANSOMIXER—

ENGINEERED for PRODUCTION!

All the Features Your Experience Shows Should Be In a Mixer Are Engineered Into TRANSOMIXER

Patented and patents pending

That's why TRANSOMIXER proves itself on the only test that really counts — more yardage all day, every day. How? By more speed on the job than you've ever seen — by cutting down-time for repairs and maintenance to the bone through these built-in extra advantages:

- Equipment damaging shock loads are eliminated by the patented Transo Direct Drive. The planetary type reverse transmission with a spring loaded clutch running in oil makes smooth starting and discharge reversing inherent.
- Direct coupling of the drive to the drum through a rugged universal joint spider eliminates costly replacements and maintenance on ring gears, chains, and sprockets. 800 to 1600 pounds of non-productive dead weight are eliminated, too.
- Rugged construction, precision engineering, allow immediate shifting from mixing to discharge. Unloading is amazingly fast—two discharge and two mixing speeds give maximum versatility.
- A new type wear-proof seal between hopper and drum is *permanently* leak-proof. Seal worries are things of the past.
- The built-in water pump is easy to reach and has its own spring loaded clutch.
- Transomixers are designed to the specifications of the Truck Mixers Manufacturers' Bureau and are from 12" to 17" shorter than competitive models of equal capacity.

FASTER, LONGER-LASTING, LIGHTER, SHORTER

It's Engineered That Way

TRANSO

THE TRANSMISSION & GEAR CO.

10421 HAGGERTY AVE. • DEARBORN, MICH.

STEARNS ZIPPER

Cuts labor costs 25%

Still another plant reports: "... better looking, more uniform units at less cost," after easy conversion in May to this small, new, one-man, semi-automatic, power-operated, vibratory, concrete block machine, *with no further investment in auxiliary equipment!*

It takes much less sales effort to sell these Zipper units, according to the manager of the Marysville plant. Customers naturally prefer beautiful, vibrated blocks in a variety of sizes, with uniform texture, clean, sharp edges and pressed tops.

WM. J. CONRAD & SON

BUILDING MATERIAL COAL CEMENT BRICK CONCRETE BURIAL VAULTS

PHONE 2158 MARYSVILLE, OHIO

Stearns Mfg. Co. Inc.,
Adrian, Michigan

August 28, 1951

Gentlemen:

In reply to your recent inquiry as to how the Stearns Zipper is working out for us:

We have been making tamped concrete blocks for the past 35 years, but to make better looking, more uniform units at less cost, early this year we looked over the different types of automatic machines and decided on the Zipper for its rigid construction and one-man operation.

We are today producing 1800-2000 blocks per day with a saving of 25% in labor. These Zipper units are in three sizes, with uniform texture on face of block, clean, sharp edges and pressed tops. It goes without saying that it takes much less sales effort than formerly to sell these units.

We also feel the Zipper machine is much easier on the operator. It practically runs by itself.

In installing this machine, we were able to utilize all our auxiliary equipment. In our opinion, any small plant wishing to convert from the old tamp type to a modern machine, should see the Stearns Zipper in action.

Yours very truly,
WM. J. CONRAD & SON
BY Edgar L Conrad

Executives of this 35-year-old, Central Ohio, coal and building materials company are, left to right, Edgar L. Conrad, manager; Ernest W. Fenwick, office manager, and Walter G. Burger, yard foreman. All block equipment is Stearns—Zipper, mixer and skip. More than two acres in extent, the plant serves the territory within 20 miles of Marysville, employs 10.

Guts and stamina! Simplified construction! Compact! (6'x4'x6'—4100 lbs.) Every part easily accessible! Trouble-free! Easier on operator! This one-man Stearns Zipper in Marysville, O., has proved to its owners that no better small block machine has ever been placed on the market! One 8", 10" or 12" unit (or equivalent) per cycle. "1800-2000 blocks per day!"

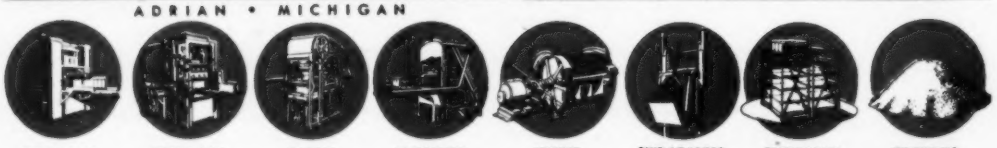
MODERNIZE WITH A STEARNS! BACKED BY MORE THAN A QUARTER-CENTURY OF KNOW-HOW!

STEARNS

MANUFACTURING COMPANY · INC

ADRIAN • MICHIGAN

YOU BE THE JUDGE!—Call, wire or write today for location of ZIPPER nearest you. *See it in operation* before you make your choice!



STEARNS 1S | STEARNS 5O | ZIPPERS | JOLTCRETES | MIXERS | SKIP LOADERS | TURNTABLES | SINTERLITE

1939

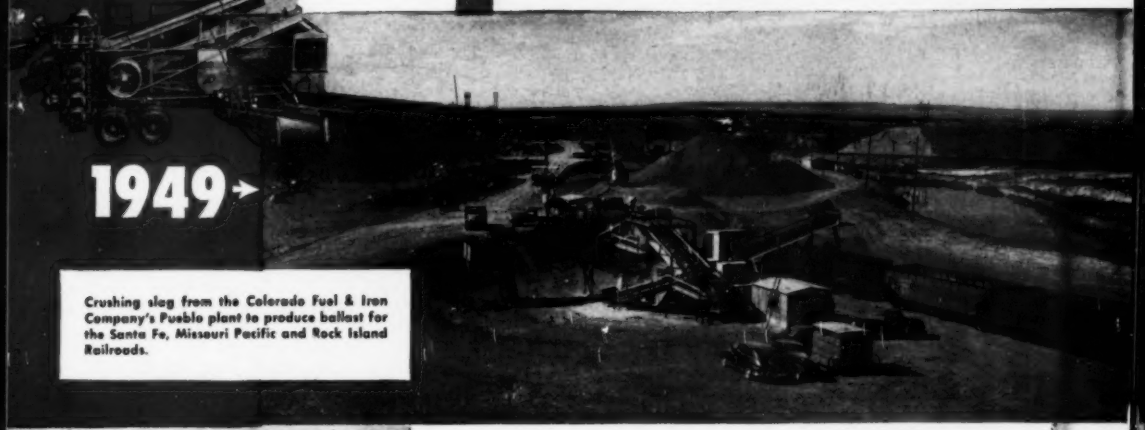
1940

1942

4 Austin-Western CRUSHING PLANTS

for Arthur & Allen of Pueblo, Colorado

1949→



Crushing slag from the Colorado Fuel & Iron Company's Pueblo plant to produce ballast for the Santa Fe, Missouri Pacific and Rock Island Railroads.

The man at the feed conveyor in the foreground is salvaging iron from the slag.

This, the fourth Austin-Western Crushing and Screening Plant purchased by Arthur & Allen over a ten-year period, has an average run of 350 tons per hour and has reached a peak output of 420 tons per hour. The finished product is, in almost all cases, 1½" minus to ⅜" plus. The percentage of crush is approximately 60.

Whatever your production requirements, an Austin-Western Plant, designed and tailor-made to meet them, will do the same sort of outstanding job for you. Let's talk it over.

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U.S.A.

Subsidiary of Baldwin-Lima-Hamilton Corporation

These conveyors are carrying the combined output of jaw and roll crushers.

The loading hopper is arranged to accommodate two trucks at one time.

BUILDERS OF ROAD MACHINERY

Austin Western

BALDWIN BLH LIMA-HAMILTON

NO COMPROMISE IN MM ENGINES

In selecting power that will stand up longer under heavy industrial loads, don't compromise—pick MM . . . the design that offers low speed with ample size and weight.

All MM engines are engineered to produce high torque at reduced speeds by efficient, *high turbulence* combustion and free-flow intake manifolds. This permits them to take sudden loads without stalling.

Rather than compromise high torque for higher horsepower at high rpm, MM heavy-duty engines are designed to deliver *consistent power . . . to take sudden loads in stride* without reducing the torque or twisting force. That is why MM Industrial Engines and Power Units give outstanding performance . . . are the preferred unit for crushers, draglines, shovels, generators, hoists, pumps.

SEE YOUR MM DEALER-DISTRIBUTOR, OR WRITE

MINNEAPOLIS-MOLINE
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TISCO MANGANESE STEEL WEARING PARTS

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TIMANG WELDING PRODUCTS

Since TW 1742

TAYLOR-WHARTON IRON and STEEL COMPANY

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CALCINER for burning LIMESTONE MAGNESITE DOLOMITE etc.

4 SIZES AVAILABLE

PREHEATS — CALCINES — COOLS

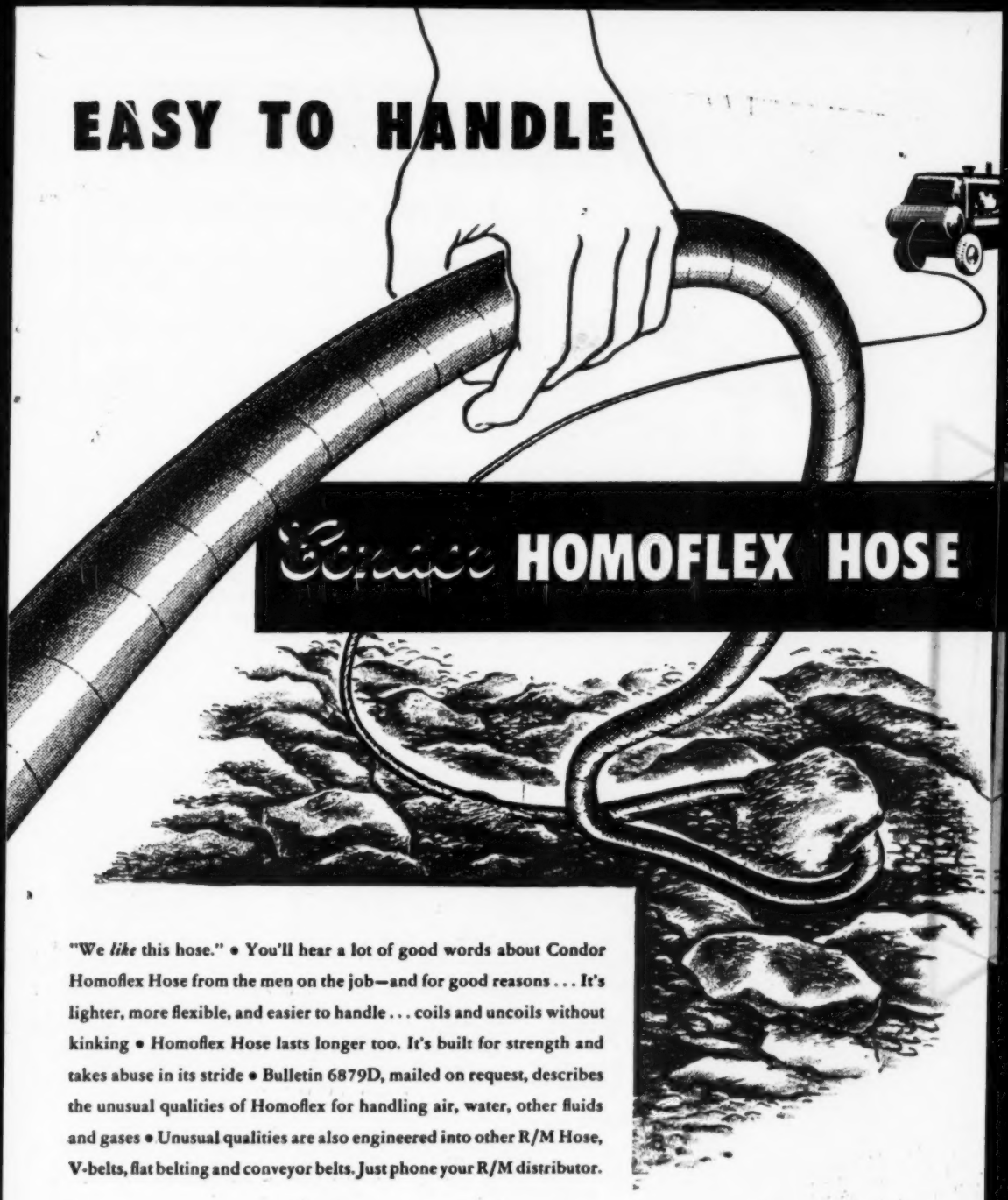
AUTOMATIC CONTINUOUS OPERATION
MINIMUM FUEL CONSUMPTION

There are extra dividends available in the operation of your plant when you use Ellernan Calciners . . . let us explain the exclusive features . . . write today for literature and detailed information applicable to your operation.

THE ELLERNAN CO.

Continental Bank Bldg. — Salt Lake City, Utah

EASY TO HANDLE



Condor HOMOFLEX HOSE

"We *like* this hose." • You'll hear a lot of good words about Condor Homoflex Hose from the men on the job—and for good reasons . . . It's lighter, more flexible, and easier to handle . . . coils and uncoils without kinking • Homoflex Hose lasts longer too. It's built for strength and takes abuse in its stride • Bulletin 6879D, mailed on request, describes the unusual qualities of Homoflex for handling air, water, other fluids and gases • Unusual qualities are also engineered into other R/M Hose, V-belts, flat belting and conveyor belts. Just phone your R/M distributor.

RM

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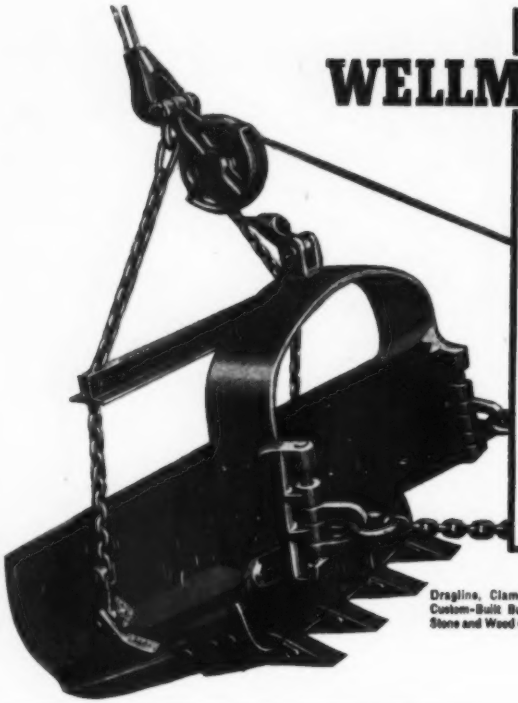
RAYBESTOS-MANHATTAN, INC.

Manufacturers of Mechanical Rubber Products • Rubber Covered Equipment • Radiator Hose • Fan Belts • Brake Linings • Brake Blocks • Clutch Facings • Packings • Asbestos Textiles • Powdered Metal Products • Abrasive and Diamond Wheels • Bowling Balls



Dragline, Clamshell, Custom-Built Buckets Stone and Wood Grabs

WELLMAN *Williams Type*

MORE YARDAGE PER DAY

● Elimination of excess materials and careful weight distribution permit rapid, rhythmic operation of Wellman Dragline Buckets. Operators can cover a wider digging radius with this streamlined bucket.

Built of special alloy steel, using strong welded design, Wellman buckets provide strength and stamina for long-term economy. Perforated designs also available. You'll do better with Wellman.

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THE WELLMAN ENGINEERING COMPANY
7014 Central Avenue
Cleveland 4, Ohio

BIG SIZES, too...

An S-A Pan Conveyor moves stone for rip rap in large volume from dumping and crushing station up to a storage bin 60 feet away. This S-A engineered system achieves a *new low cost per ton*—for continuous or intermittent operation.

In designing this installation, S-A engineers drew on 50 years' experience in working with all types of bulk material handling equipment *for large plants and small ones.* WRITE TODAY!

COLUMBIA QUARRY CO.
KRAUSE, ILL.

Rock from the quarry is discharged from trucks into the crusher from which it moves on an S-A Pan Conveyor up an incline to a large steel storage bin. Big lumps drop by hinged chute to trucks or rail cars below. Smaller size pieces are reclaimed from hoppered storage bin into trucks below.

1901-1951

50 years experience with bulk handling

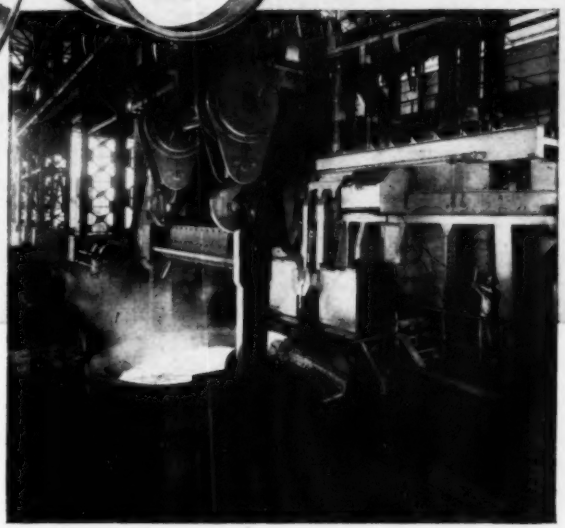
STEPHEN S-A ADAMSON MFG. CO.

29 Ridgeway Avenue, Aurora, Illinois · Los Angeles, Calif. · Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

Steel

BULWARK OF FREEDOM, AND . . .



MORE steel—100 tons more steel every 5 hours. That is what the new electric furnace, pictured at the right, added in August to your at-home steel-making capacity.

Still another of these new, fast steel-making furnaces will be operating at year's end to double this capacity increase. Another blooming mill and auxiliary equipment will also be completed at Sheffield mills.

Yes Sheffield is doing more than its share to enable America to continue to use twice as much steel as all the rest of the world and keep on forging the highest level of better living the world has ever known.

In the past 10 years Sheffield has more than doubled your at-home steel-making capacity. In the same period of time, the steel industry as a whole has increased about one-fourth.

West of the Mississippi and East of the Rockies—Sheffield's primary trade territory—steel-making capacity is looming larger and larger, to meet your needs and make a larger contribution to the industrial growth of the region.

SHEFFIELD STEEL CORPORATION
HOUSTON KANSAS CITY TULSA
SUBSIDIARY OF ARMCO STEEL CORPORATION

SHEFFIELD MOLY-COP T. M.
COPPER-MOLYBDENUM ALLOY
Grinding Balls

USED and PROVED ALL AROUND THE WORLD

IRON AND STEEL *SCRAP* MEANS . . . . . **MORE STEEL FOR AMERICA** *More Money In Your Pocket!* *GET YOURS OFF TO* THE DEFENSE LINES NOW!

UP TO 99%?

Research Corp. Engineer — Yes sir, we are now in a position to offer our equipment and experience gained in other industries to cement plants for the removal of dust from cement plant furnace gases.

This experience enables us to guarantee any efficiency up to 99% depending on your individual requirements.

Plant Manager — What about draft loss?

Research Corp. Engineer — It's extremely low —only a few tenths of an inch of water.

Plant Manager — Do you actually guarantee performance?

Research Corp. Engineer — Absolutely. And you can depend upon Research Corporation because of our wide experience in the field of electrical precipitation. That's your yardstick of performance.

For more data on Research-installed Cottrells, send for Bulletin 500

RC 120

RESEARCH CORPORATION

405 Lexington Avenue, New York 17, N.Y.

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Don't YOU Forget it!

. . . WHITCOMB LOCOMOTIVES are the answer to tough haulage problems.

THE WHITCOMB LOCOMOTIVE CO., ROCHELLE, ILLINOIS

Subsidiary Baldwin-Lima-Hamilton Corporation

FOR SALE

COMPLETELY RECONDITIONED PORTABLE ROCK CRUSHING AND SCREENING PLANT

Immediate Delivery

Principal Items in Plant . . .

1—4¼' Symons Cone Crusher powered with an LP601 Cummins Diesel engine, 250 H.P. mounted on a heavy 3-axle pneumatic tired chassis. This unit is also equipped with a 2-stage compressor with electric motor for starting.

1—36" Telsmith Cone Crusher powered with a UD-18 International Diesel engine, and equipped with a Symons 4' x 12' double deck vibrating screen powered by electric motor. This unit is also equipped with a bucket return elevator and an under-crusher conveyor, both powered by electric motors. The entire Telsmith unit is mounted on a heavy 3-axle pneumatic tired chassis.

1—3' x 6' Symons Screen, single deck, type F.

1—Caterpillar D13000 Diesel-generating set, 75 KW capacity, mounted on 2-axle pneumatic-tired chassis. This unit is built over for weather protection. For use in conjunction with the generating set, there is also a 2-wheeled pneumatic-tired trailer equipped with a 7-unit switchboard for central control.

3—Portable conveyors, 30" x 52', powered with electric motors.

1—Portable conveyor, 20" x 40', powered with electric motor.

1—21 cubic yard bin.

Approximate Capacities in Gravel Pit with 60% Crushing Required from 10" to 2", 200 tons per hour—From 10" to 1", 150 tons per hour.

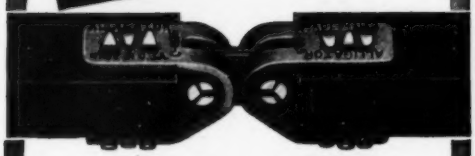
Full Information on Request . . . Write—Phone—Wire . . . Today

Brown-Bevis Equipment Co.

4900 Santa Fe Ave. JE 5221 Los Angeles 58, Calif.

Now you can fasten V-belts by using

ALLIGATOR
V-BELT FASTENERS



● Alligator V-Belt Fasteners and open-end (long length) V-belting in rolls will enable you to make up multiple V-belt drives for a wide variety of applications.

Available for B, C and D sizes of V-belting.

Not to be used for repairing endless cord V-belts.

Bulletin V-211 will give you complete details. A copy mailed on request.

Order from your supply house

FLEXIBLE STEEL LACING COMPANY
4623 Lexington St., Chicago 44, Illinois

Also sole manufacturers of Alligator Steel Belt Lacing for flat conveyor and transmission belts and FLEXCO Belt Fasteners and Rip Plates for fastening and repairing conveyor belts.

25,000+ Cu. Yds. in 265 Hours

H&B 8" Pump Averages Nearly 100 Cu. Yds. per Hour!

H&B
ESTABLISHED 1887

25,000+ cu. yds. in 265 working hours! That's the record of the Gunyon Dredging Co., Elkhorn, Wis., on a job at Lorain, Ohio. This was the total time, including the pipe line work on a discharge line 700 to 1200 lineal feet. The dredging was done with a Hetherington & Berner 8" Dreadnaught type pump. There's an H & B dreadnaught or standard type pump for every dredging job. Write for Bulletin DP-147.

HETHERINGTON & BERNER INC.
718 Kentucky Avenue — Indianapolis 7, Indiana

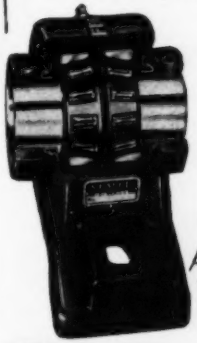
End of the line

Permanent magnets inside pulley cause tramp metal to cling to belt as coal feeds by and drops off. After belt passes underside of magnetized pulley, tramp metal drops into separate bin.

for tramp metal

Metallic scrap in coal has long played serious havoc in furnace machinery—industrial or home. But, thanks to this new Homer Permanent Magnet Separator Pulley for coal conveyors, all harmful tramp metal can now be removed while loading for shipment.

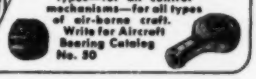
Here, as in so much of industry's hard working equipment, you'll find Shafer ConCaVex Pillow Blocks on the job . . . minimizing friction, reducing power consumption, compensating for misalignments, providing reserve load and shock capacities and protection against the ravages of extreme weather, dust and dirt conditions that are part-and-parcel of coal processing operations.



Shafer ConCaVex bearing units (famous for a third of a century) are available in a full range of types and sizes that cover hundreds of industrial requirements—and probably yours. Write for Industrial Bearing Catalog No. 51.

Aircraft Bearings, Too!

Single row, double row, rod end types—for all control mechanisms—for all types of air-borne craft. Write for Aircraft Bearing Catalog No. 50



SHAFER ConCaVex

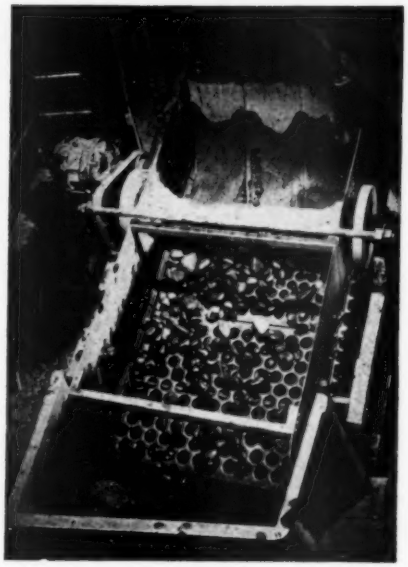
SHAFER BEARING CORPORATION
801 BURLINGTON AVE.
DOWNERS GROVE, ILLINOIS

The screen that "can take it"

. . . and always give good service

For highly abrasive material, Hendrick Perforated Metal Plate is heat-treated by an exclusive process and maintains uniformity of mesh throughout an unapproached length of service life. That's why it is both most efficient and most economical for vibrating and shaking screens.

The full clearance of Hendrick Perforated Plate minimizes clogging, and the case with which decks can be changed cuts labor costs. It can be furnished—flat or corrugated—with any desired shape and size of perforations, in proper gauges of tank, high carbon, high tensile, and abrasive-resisting steels, and in other commercially rolled metals. Write for Hendrick Perforated Plate Catalogue.



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HENDRICK

Manufacturing Company

39 DUNDAFF STREET, CARBONDALE, PENNA

Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Wedge-Slot Screens
Architectural Grilles
Mitco Open Steel Flooring,
Shur-Site Treads, Armorgrids

HINGED PLATEGRIP

BELT FASTENER No. 500

FOR HEAVY CONVEYOR BELTS OF CHANGING LENGTH

These heavy-duty belt fasteners make a strong, flexible joint in conveyor belts, belts of any width and of from 3/16" to 1/2" thickness. They offer special advantages in mines, quarries or industrial setups where length of position of belt is frequently changed, because sections can be removed or added at will. Joints are opened for this purpose by simply pulling out the hinge pin.

Easily and quickly applied on the job or in the shop. Special design gives deep compression into belting and smooth, flush joint.

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ARMSTRONG-BRAY & CO.

5394 NORTHWEST HIGHWAY CHICAGO 30

Here's your new **"BUCKET SAVER"** *booklet*

The ONLY book available that tells . . .

- **HOW TO SAVE YOUR BUCKET**
  Among the many "bucket saver" suggestions are a list of "do's" and "don'ts" on the use and abuse of clamshell buckets; tips on how to prolong cable life; common operating mistakes that make bucket lips bow in or bend out.
- **HOW TO GET MORE OUT OF YOUR BUCKET**
  "How to Reeve the Bucket for Maximum Efficiency" is illustrated and described in detail. One page is devoted to instructions for operators.
- **HOW TO REPAIR BUCKETS**
  Methods of renewing the cutting edges of worn bucket lips include special welding precautions. This section contains instructions for removing and replacing ball bearings in lever arm sheaves, lubrication instructions, and many other practical hints for care and maintenance.

SEND FOR BULLETIN 2373 TODAY!

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of Blaw-Knox Company
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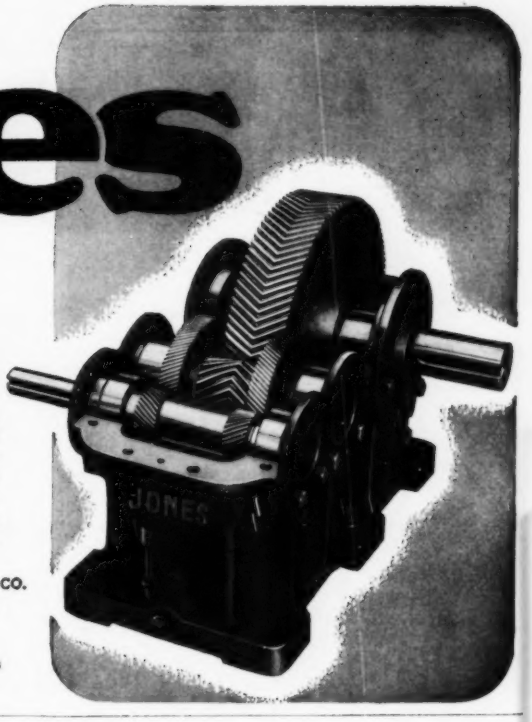
BLAW-KNOX CLAMSHELL **BUCKETS**

THE MOST COMPLETE RANGE OF SIZES AND TYPES

Jones

Herringbone SPEED REDUCERS—



. . . are built in single, double and triple reduction types. Symmetrical gear arrangement provides balanced loads on liberally proportioned bearings. Housings are substantially constructed, well ribbed and have generous pads for foot bolts.

The method of selecting these reducers with complete horsepower and dimension tables is shown in Catalog 70.

Since 1890 Jones In The Service Of Industry

W. A. JONES FOUNDRY & MACHINE CO.
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Herringbone — Worm — Spur — Gear Speed Reducers
Cast Iron Pulleys • Cut Gears • V-Belt Sheaves
Anti-Friction Pillow Blocks • Flexible Couplings

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Exploration for coal and other mineral deposits. Foundation test boring and grout hole drilling for bridges, dams and all heavy structures.

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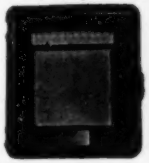
"ECONOMIZE!"

Sure the eagle is screaming. In these days of increasing fuel and labor costs, every economy you can make is important. Here is a sure way to SAVE FUEL. Cambridge Gas Analyzers will provide the Burner with a continuous and simultaneous record of the oxygen, carbon dioxide, and combustibles in the flue gas. O_2 analysis serves to warn against excessive air supply; combustibles analysis indicates oxygen demand under all conditions; CO_2 analysis reflects state of calcining process. Cambridge instruments make uniform kiln operations possible with ease. Savings effected pay for installation in short time.



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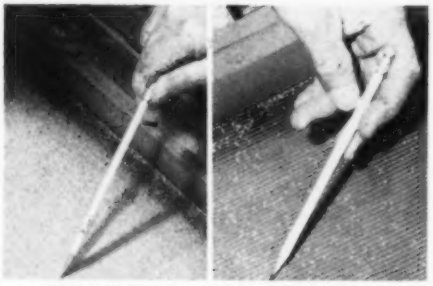

Without Heater
note blinding of mesh

With Heater
note lack of blinding

increase capacity and life of your screens with the

Used on any single or multiple woven-wire screen; No. 2 mesh or smaller; Hanco Electric Screen Heaters reduce the moisture content of sand, limestone, lime, clay etc. to prevent "blinding". Screen capacity is increased as much as 50%. Beating to open the screen is eliminated; screens last longer. Write for bulletin.

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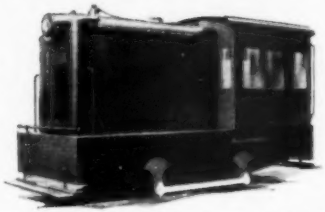
HANCO Electric Screen Heaters

GREATER WORK OUTPUT —LOWEST TON-MILE COSTS

At right is a 20-Ton, 24" Gauge, 0-4-0 Davenport Diesel Locomotive with Torque Converter Drive, engine rated at 153 h.p. at 1800 r.p.m.



Available in STEAM FIRELESS GASOLINE DIESEL with ELECTRIC or HYDRAULIC or MECHANICAL DRIVE

WRITE US TODAY

Davenport and Porter Locomotives are designed and built to deliver economical, trouble-free rail haulage through extra years of service. When FITTED to their particular range of duty they deliver the maximum service at least cost.

Notable among available Davenport and Porter Locomotives are those with Torque Converter (Hydraulic) Drive. They offer smooth, quiet transition from one speed level to another without engine slowdown during speed changes; freedom from load shocks or jerks; easier operation and greater work output.

TO FIT YOUR NEEDS

Our engineers will gladly analyze your haulage requirements and submit recommendations for best results.

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DAVENPORT BESLER CORPORATION
DAVENPORT IOWA, U.S.A.

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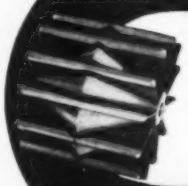
increases belt life up to 400%



Belt Saver PULLEY

Available in Diameter sizes ranging from 6" to 40"

Write for Bulletin 35-A

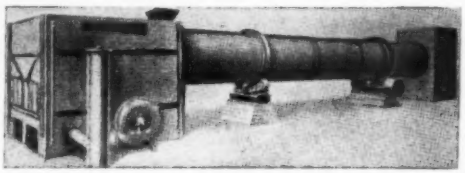
126

to Sprout, Waldron & Co., Inc., 6 Waldron St., Muncy, Pa.

Sprout Waldron
Manufacturing Engineers
MUNCY PENNSYLVANIA

Based on users' reports

DRYERS & KILNS . . *for all purposes*



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YOU CAN'T BEAT this widely esteemed "workhorse" for versatility, output, endurance, and operating economy.

The "Little Giant" can be truck-mounted, crawler mounted, or rail propulsion mounted. Patented ball bearing turntable has no center pin or hook rollers, and is guaranteed for 10 years.

You have a job to do—and "Little Giant" can handle it better!

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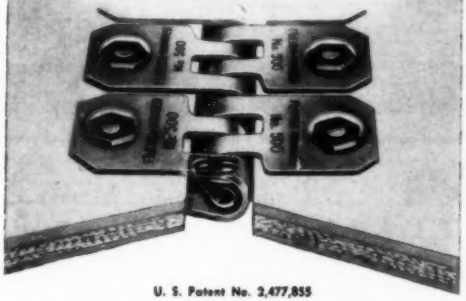
... the new separable
FLEXCO HINGED *BELT FASTENERS*



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- For joining grader, trencher, ditcher and other earth moving conveyor belts.
- For belts 3/8" to 1/2" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . strain is distributed uniformly across joint.

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After clearing 500 acres of salt marsh for the Leslie Salt Company, J. O. Archibald, contractor of Redwood City, California said, "*LUBRIPLATE kept equipment rolling in mud, muck and water.*" You may never have an earth-moving job like this to do, but if you turn a wheel in any industry, you can profit by Mr. Archibald's experience.

1. LUBRIPLATE reduces friction and wear

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Write today for case histories of savings made through the use of LUBRIPLATE in your industry.

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The Different LUBRICANT!

DEALERS EVERYWHERE, consult your Classified Telephone Book

New Records in Gravel Reduction... RELIANCE Jaw Crusher

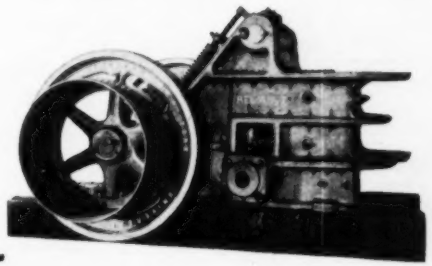
Chalk up top output and profit figures by single pass reduction of gravel with a RELIANCE Jaw Crusher.

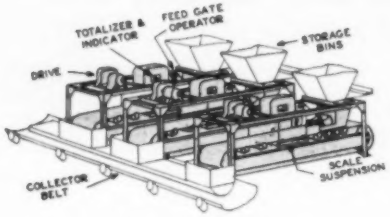
RELIANCE Crushers are especially suited for this job—featuring rugged all-steel construction, low and large receiving openings, and long deep jaws for sure gripping and crushing. Jaws adjustable for fine or coarse product.

Fitted with Alemite high-pressure lubrication, smooth-running RELIANCE Jaw Crushers insure long, continuous service life and low-cost maintenance.

Write for Catalog No. 48, describing the RELIANCE complete line of sand and gravel washing and handling equipment.

UNIVERSAL ROAD MACHINERY CO., Kingston, N. Y.





TRANSPORTOFEEDERS

Automatically transport, weigh, indicate, integrate, totalize tonnage and maintain a pre-set rate of feed for blending raw materials.

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TRANSPORTOMETER DIVISION
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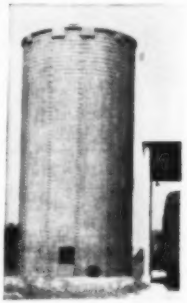
What bulk materials do you handle?

• Dry silica sand is handled in the Neff & Fry Storage Bin pictured here. The bin is 24' dia. x 50' high. It holds 1,180 tons of sand—enough to load quite a string of freight cars.

You'll be rather astonished to see the list of nearly 90 kinds of flowable bulk materials stored in N. & F. Bins. The list is given in our interesting folder, "Bins With the Strength of Pillars."

The folder also contains a list of prominent users—many of the best known companies in the United States. You can be sure that the purchase of N. & F. Bins was preceded by careful investigation and comparison.

If you are concerned with the handling of flowable bulk materials, ask for a copy of the folder. Do it now while the subject is on your mind.



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Cement Plants
Storage Methods
Operating Costs

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Phone 1828

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Plant Layout
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Construction
Appraisals

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For gypsum plant in Southwest. Must be experienced in maintenance and construction of gypsum board and plaster equipment.

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CONTRACTORS
Fireclays, coal, limestone, gravel deposits, all minerals. Blast hole drilling.
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CORE DRILLING ANYWHERE
We look into the earth
PENNSYLVANIA DRILLING COMPANY
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WANTED
FOREMAN—SLAG OPERATION

Capable, experienced in Shovel loading, crushing and screening — Salary $100.00 per week. Location Gary, Indiana. Give full details.

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GARY SLAG CORPORATION
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WANTED

Contractor or person well experienced in rock crushing and screening and who would be interested in operating a rock crushing and screening plant in Northwestern Arizona. Advise if can furnish any equipment such as power shovel, compressor or trucks; also if experienced in screening to fine granulation. Address inquiries to

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POSITIONS AVAILABLE

Purchasing Director—Old reliable midwestern company wants 1st class man to head up purchasing. Experience in heavy conveyors, rock crushing, road machinery or similar heavy equipment. For quick action send complete record or write for application. Confidential. Salary $9 to $12,000.

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WANTED TO BUY

1 yard Sauerman double drum hoist with 2 speed front drum, without power. State model, age, price and condition.

ATHENS BUILDING MATERIAL CO.
P.O. Box 189 Athens, Ohio
Phone 886

QUALITY CONTROL SUPERVISOR

For gypsum plant in Southwest. Must be experienced in control and inspection of gypsum products and processes.

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Assistant Plant Chemist. Cement Laboratory, with advantages of large organization. College graduates only, cement experience desirable. Send resume of qualifications and experience.

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2—Trolley Locomotives, 250 Volt, DC, 24" Gauge. Are they in shape for immediate use?

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COMPLETE PLANTS FOR LIQUIDATION

Complete plants for liquidation, equipment, machinery, structural steel, pipe, and tonnages of scrap iron.

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One 150 HP, 720 RPM, 2300 Volt, 3 phase, 60 cycle AC Sleeve Bearing G.E. Motor complete on sliding base, used less than three months.

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1 Chain Crowd Shovel Attachment Lima Type 34 Machine. This shovel is practically new and can be purchased direct from owner less than replacement cost.

Howard Steel Erecting Company
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USED KEYSTONE 51 BLAST HOLE DRILL

Buda gas engine, reconditioned, parts warranty 90 days, $6,750, F.O.B. Beaver Falls, Pa.

Keystone Driller Company

TRUCK MIXER FOR SALE

3 yard Jaeger Low Discharge Mixer on W A 22 White. In daily use. $1500.00.

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2—9' x 170' ROTARY KILNS WITH 10' BURNING ZONES

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POSITION VACANT

Foreman or Sup't. for new plant in large eastern city to manufacture cast stone products as used for surfacing of old and new buildings. Applicant must have past experience in position of equal requirement in making of concrete products to enable him to set up and carry on the complete manufacturing operation. Salary will be made attractive for right applicant. Submit full details concerning your experience and qualifications for the position in entire confidence.

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FOR SALE

1 Schaeffer Hydrator with Raymond #3 Hammermills, mechanical separators, flotation system, complete
1 Wellman LF 10, gas producer with coal bin, piping for kilns
1 40 ft. boom for Marion shovel
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1 6 ton Vulcan locomotive 36 gauge
12 steel quarry cars 36 gauge
1 Jaw crusher Cedar Rapids 10 x 20
1 Day pulverizer
1 #2 Williams mill
Screens, conveyors, etc.

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4" Inside Diameter WATER SUPPLY & DISCHARGE HOSE

STOCK # QS-44

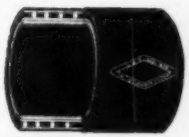
Cotton jacket, rubber lined Hose suitabel for water supply and discharge service. Constructed exactly like Fire Department Hose. Light in weight. For pressures to 200 pounds.

Available in 10-15-20-25-35 & 50 ft. Lengths

SPECIALLY PRICED at $1.00 Per Foot

Male & Female I.P.T. Couplings Attached $9.00 Per Set

4" SUCTION HOSE



STOCK # QS-55

Heavy duty, smooth bore, wire inserted Suction Hose. Flexible and strong. For use in mines, sewers, trenches, etc., with diaphragm pumps, pressure pumps and other contractors' equipment.

Available in 10 & 20 Ft. Lengths

SPECIALLY PRICED at $3.45 Per Foot

Male & Female I.P.T. Couplings Attached $9.00 Per Set

INQUIRE FOR OTHER SIZES AND LENGTHS NOT LISTED.

TERMS FOB N Y C 2% 10 DAYS

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Phone: Digby 9-3810

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1—#6 Allis Chalmer Gyratory Crusher. In use. $2000.00

1—#4 Gates Gyratory. Fair operating condition. $500.00

50—Williams Jumbo Jr. Hammer-mill hammers, $6.00 ea.

1—105 ft. Ingersoll Rand Compressor & Jack Hammer. Good Condition. $850.00

JERSEY QUARRY, INC.
Fieldon, Illinois

TRUCK MIXER FLEET FOR RENT OR SALE

90% of this fleet 1949-1950 and 1951 models LF and LJ 10 wheel Mack Trucks. Mixers are Jaeger and Rex 4½ and 5½ high discharge and horizontals, most of which are 49's, 50's and 51's. Some of this equipment can be purchased on rental-purchase plan. Most of it now available for immediate delivery.

SPECIAL: 2—365 CFM compressors, 1950 models attractively priced.

Rental Mixer Corporation

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NEwtown 9-7777

FOR SALE
Surplus Quarry Equipment

1 #25 Kennedy Crusher, late type with split grinding ring, new type oiling system and V-Belt drive with motor—Good Condition.
1 Champion 10 x 36 Ball Bearing Overhead eccentric Jaw Crusher and drive—Good Condition — (Factory rebuilt in 1949).
2 42" x 60" Robins Vibrex 2 deck vibrating screens—Fair Condition.
65' 8 ply—18" wide transmission belt—Like New.
1 #88 Cast Iron Sprocket, 77 tooth, 3" Bore—New.
1 #88 Cast Iron Sprocket, 15 tooth, 2⅛" Bore—New.
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3—Whitcomb 15 Ton Diesel—36" Ga.
1—Davenport 10 Ton Diesel—36" Ga. Like New.
1—Plymouth 70 Ton Propane—Electric—S.G.

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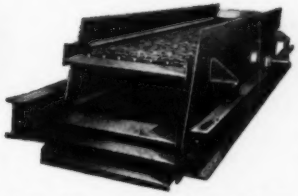

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3 Super "C" Tournapulls with 12 to 15 yard scrapers, powered by Cummins 150 horsepower, 6 cylinder diesel engines; with cabs; all in the 5000 series serial numbers; excellent mechanical shape.

1 "C" Tournapull with an 11 yard heaped scraper; powered by a Caterpillar diesel engine. Very reasonable buy.

1 LeTourneau Tiltdozer blade, NEW, for a D-6 Caterpillar tractor; cable operated; can be used as a straight dozer blade. Good price.

1 International TD-18 tractor, wide tracks, with power control unit, and hydraulic arms for bulldozer blade; clean. Very good condition.

1 LeTourneau double drum power control unit. NEW T series. Excellent buy.

SPECIAL

1 Unit model 1014 truck crane, 10 ton, ½ cubic yard capacity, used, EXCELLENT CONDITION, like new. About one year old, seen very little work. Set up for Crane or Clamshell work, has ½ yd. bucket, 30 feet of boom. Excellent rubber ten 9.00 x 20 tires. Waukesha engines in truck and crane.

1 Terratrac tractor, model GT 25, with loader attachment powered by a 25 horsepower Continental gasoline engine. 10 inch crawler pads. About one year old. Moderately priced.

SPECIAL

2 Jaeger 365 cubic foot compressors powered by International UD-18A diesel engines, four pneumatic tires on each. Very excellent condition.

2 7 yard capacity concrete Hoppers, Jaeger, 3 gates. Very excellent condition. Ideal for use with Truck Mixers. Eliminate waiting time.

SPECIAL

2 5½ yard Jaeger High Discharge, end loader, Truck Mixers. Mounted on LFSW Mack Trucks, with ten (10.00 x 22) 14 ply tires on each truck; powered by Mack EN510A gasoline engines. All equipment new in 1951. Excellent buy.

2 5 yard capacity Jaeger Truck Mixers, Horizontal type. Separate engine drive. Good price. Both unmounted.

2 4 yard capacity Ransome Truck Mixers, Horizontal Type. Separate engine drive. Attractively priced. Both unmounted.

1 60 cfm Schramm Air Compressor, serial number 98181.

2 75 cfm Jaeger Air Compressors.

1 210 cfm Chicago Pneumatic Air Compressor, serial number 301600.

3 Thor number 23 Paving Breakers.

2 Thor number 25 Paving Breakers.

1 Thor number 38 Rock Drill.

1 Cleveland C-9 Paving Breaker.

1 Cleveland CD-8 Backfill Tamper 1" hex chuck.

1 Thor number 75 Rockdrill, serial number 65127.

1 133 cpm ¾" hex chuck Thor chipping hammer.

1 36" Mall air powered chain saw.

1 Beach saw table 10-A, 14" blade, gasoline powered.

1 Model 31 CH&E Saw Table, 14" blade, 5 H.P. gasoline engine.

4 Jaeger Hoister Towers complete with Hoist and 37 feet of hoister tower. Additional tower available up to 67 feet.

1 Jackson FS6A-2 flexible shaft vibrator 21 feet of shaft gasoline powered.

1 HS-1 Jackson Hydraulic Vibrator with 50 feet of shaft.

1 HS-A2 Jackson Hydraulic Vibrator with 50 feet of shaft.

1 Bailey Vibrator with 2 feet of flexible shaft.

2 Jaeger 1½ Self Priming Centrifugal Pumps.

5 Jaeger 2P, two inch pumps, gasoline powered self priming.

2 Jaeger 3P, three inch self priming centrifugal pumps.

1 Marlow 3P, three inch pump.

2 Jaeger 4P, four inch self priming centrifugal pump gasoline powered, capacity 40,000 gallons per hour.

1 Jaeger 4 X P, 4 inch self priming centrifugal pump, gasoline powered capacity 30,000 gallons per hour.

2 Jaeger 4 CPH, self priming centrifugal pumps.

2 6 P Jaeger self priming centrifugal pumps, gasoline powered capacity 60,000 gallons per hour.

2 Jaeger 16EL Portable Concrete Mixers, gasoline powered, with skip, water tank.

7 Jaeger 11EL Concrete Mixers with skips and also Hoppers, water tanks, gasoline powered.

6 10 EL Jaeger Concrete Mixers, with skips and also Hoppers, water tanks, gasoline powered.

2 Jaeger 7 EL Concrete Mixers, with skips, water tanks, gasoline powered.

2 Jaeger EL Portable Concrete Mixers, skip loader, gasoline powered.

1 Jaeger 3½ SNT Hopper Type portable Concrete Mixer, gasoline powered.

1 Jaeger 3½ ST tilting type portable Concrete Mixer, gasoline powered.

3 Jaeger Plaster Mortar Mixers, model 6-8 PV, gasoline powered, 1 bag capacity.

1 Ideal rubber tired one man tractor with snow plough blade. Excellent condition. New, Priced right, can be used for a variety of jobs.

1 Mandt swing loader, with loader, crane and back hoe attachments, rubber tires, cab. New in 1950.

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2400' of 1260 roller chain, D1 RH & LH links
50000' of elevator, drive and drag chain
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New conveyor equipment, 24", 30", 36"
Robins 42" belt conveyor parts for 500'
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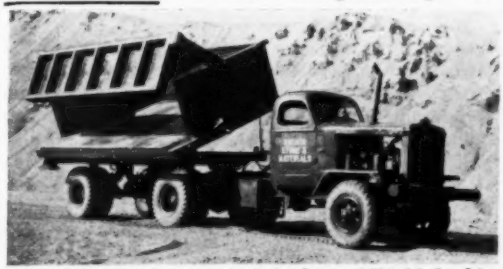

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4 Low Maintenance
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100 ton Priest Vertical Kiln (Oil Fired) recently installed for Odda Smelteverk A/S Odda-Norway.

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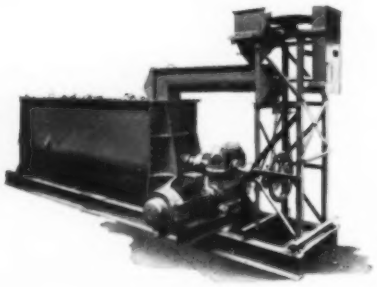

It's "on record" that the Priest Vertical Lime Kiln has established high marks for lime plant efficiency and profits in many British and Continental installations.

This revolutionary shaft type Kiln, which is fast winning new friends among American producers, was designed by Priest Furnaces Ltd. of Middlesbrough, England, collaborating with Dr. N. V. S. Knibbs.

Requiring a much smaller site than rotary kilns, the compact Priest Kiln is fully mechanized and automatically operated. A patented water-cooled burner insures uniform fuel distribution, high lime output, and a top quality product.

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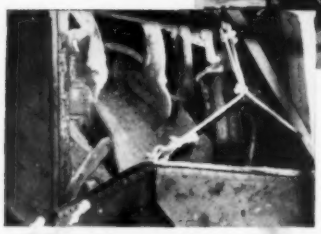
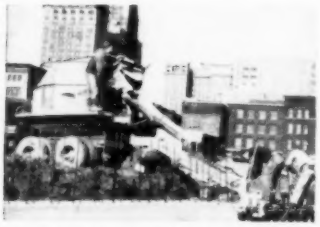
Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

17 Years Young and 3,100,000 Cubic Yards to show for it!

126-S Worthington-Ransome Big Mixer at Arundel-Brooks Concrete Corporation's Wolf Street plant, Baltimore, shows hardly any sign of wear after having poured 3,100,000 cu yd in its 17 years.



Worthington-Ransome 126-S discharging full 5 cu yd batch in approximately 30 seconds.



One of Arundel-Brooks' 6½ cu yd agitators pouring a retaining wall at General Sam Smith Park, being built to relieve traffic congestion at Light and Pratt Streets, Baltimore.

In 1950—its 17th year—this veteran concrete mixer poured more than 250,000 cu yds on a single set of liners!

This extraordinary performance of a 126-S Worthington-Ransome Blue Brute concrete mixer is attested to by Arundel-Brooks' records. The machine, given proper maintenance over its lifetime, shows virtually no wear after uncounted hours of profitable service.

Arundel-Brooks operates two other Worthington-Ransome Big Mixers—an 84-S at the Sparrow's Point plant, a 56-S at Brooklyn, Md.

And eight of the company's growing fleet of truck-mounted agitators are Worthington-Ransome Blue Brute Hi-Ups, considered "highly satisfactory in every respect."

These eight are used for most long-distance hauls because their light weight* permits carrying a maximum payload with strict adherence to highway load limits.

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